

COAL AGE

Volume 13

NEW YORK, MARCH 30, 1918

Number 13

Economic Suicide

Some facts regarding a Dangerous Government Policy that is causing labor unrest, rendering an injustice to coal-mine owners, and saving money at the expense of the public consumer. All industries are vitally concerned.

By FLOYD W. PARSONS

WE cannot win the war unless we mix justice and intelligence into the conduct of our industrial life. The production of coal so far this year has been more than a million tons less each week than the output estimated as necessary to prevent another fuel famine next winter. As a consequence, every action bearing on coal production must be carefully weighed to see that no unfavorable results arise.

In the face of this very serious situation there is discontent and the threat of a strike in that important district embracing the mines of central Pennsylvania. However, the miners can't strike. Frank J. Hayes, President of the Union, said to me in Washington last night: "We propose to insist that in all cases the men shall abide by the terms of the recent Washington agreement. If they demand an increase in one district where the price of coal has been raised, they would have to submit to a wage reduction in some other field where the mine price has been reduced. Any changes of wages now in one district would open the whole question throughout the country, and that we will not permit."

Dr. Garfield yesterday expressed the same thought, and added that he was sure the miners in Pennsylvania would rescind their demands now that they had had an opportunity to examine fully the costs of mining in the affected districts. He explained to them that the increase of 60c. awarded the operators was not an additional profit, but actually a necessary rectification of the earlier price, which had not been based on such an exhaustive investigation and which had been too low to permit many Pennsylvania operators to make any profit at all.

So much for this specific instance. Let us go a step farther. Even though there can be no serious coal strike at present in any of our fields, the men must be happy in their work and

the mine owners prosperous if a maximum production is to be attained. The Government is pursuing an economic policy that is certain to defeat the constructive efforts of the Fuel Administration. Here is a summary of the evil practice:

The railroad administration is now, and has been, making contracts with certain mines in every district, agreeing to furnish these specially appointed mines with a full car supply, providing the coal is sold to the railroad at a reduced price. Many operators find it advantageous to enter into such a deal, which insures them plenty of cars and regular work, as against a higher price for coal with only enough cars to work half time, or less.

These railroad mines as a consequence double production and draw men from all adjacent collieries. The direct result is dissatisfaction and discouragement on the part of the miners at the idle plants and an increased cost of production for these less favored companies.

Men can't live even on high wages when they work but two or three days each week. The companies can't mine at low cost under such conditions. Presto! Up goes coal prices and wages, and the public pay what the railroads save. No good is accomplished, for the railroads could secure a satisfactory fuel, and plenty of it, through priority, without disrupting uniform car distribution.

If the Government uses its ownership of cars to drive hard bargains with coal producers, will it not soon employ the same methods with steel manufacturers and others and say to them: "Give us a special price, and we will give you cars." Each time this is done the public pays the difference. But the big fact is the unrest resulting from a selfish and ill-advised national economic policy, practiced at a time when absolute justice should obtain and harmony prevail.

IDEAS AND SUGGESTIONS

A Useful Card

BY J. A. SMITH
Albert, W. Va.

The accompanying illustration shows a card which can be made to serve several useful purposes—it acts as an identification card, also as a passbook when drawing store orders, and finally it is taken up by the company issuing it as a receipt showing that the holder has been paid.

In addition to the printing shown on the face of the card, the back bears the following inscription:

This card must be presented to the clerk to have store orders charged thereon, each time a store order is drawn.

Date_____Name_____

Occupation_____

	8		16		24
1	9	To be Stamped here on 1st to 15th Pay-Day	17		25
2	10		18		26
3	11		19		27
4	12		20		28
5	13		21		29
6	14		22		30
7	15		23		31

CARD SERVES A NUMBER OF USEFUL PURPOSES

It must be presented and stamped when drawing pay for the first half of the month, and will be taken up by the paymaster on pay day for the last half of the month and be held as a receipt showing that the holder has received his pay for the month stated hereon. Take care of this card. In case of loss report it to the office.

Some time during the month cards are made out for the following month for each person on the payroll. The first time the holder draws an order he is given his card with the amount of the order charged thereon. Each time afterward that a store order is drawn it is charged on the card opposite the date on which it is drawn.

The holder of a card always knows exactly the amount he has drawn to date and for the pay period. The company officials are thereby spared much trouble and annoyance on pay day from employees who claim their store order account is incorrect.

At one plant, before these cards were adopted, it was a common occurrence each pay day to have from 12 to 20 complaints from this cause. As each complaint had to be investigated by looking up the account on the books and order stubs, there was considerable loss of time. Sometimes much ill feeling resulted, as often it was impossible to convince the claimant that a mistake had not been made. Since the cards have been in use complaints from this cause have ceased. On pay day for the first half of each month the card is stamped in the space shown as follows:

Paid 1st to 15th.
(Date of pay day.)
Blank Coal Co.

When the card is presented on pay day for the last half

of the month it is kept and filed to show that the holder has been paid.

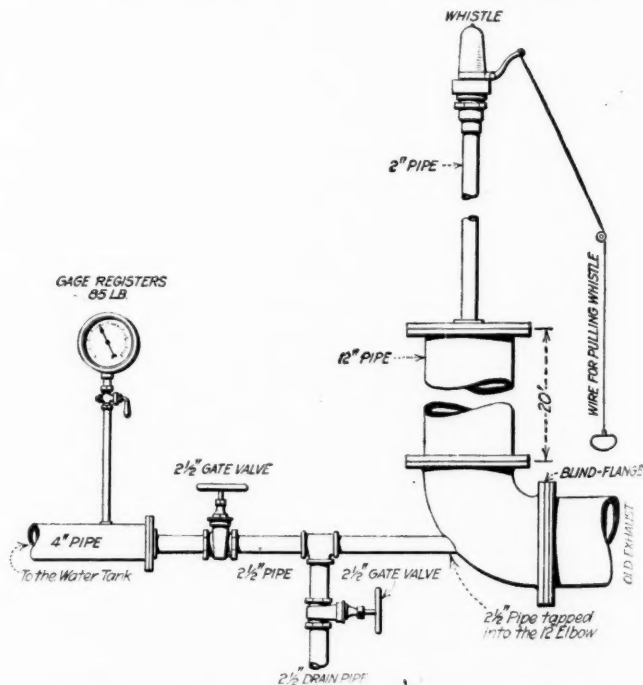
A new employee when first given a card is instructed to take care of it and in case it is lost, to immediately report this loss to the clerk, when a new card is issued and a record made of the card having been lost. This prevents any person except the owner of the card from drawing store orders or pay, unless the card presented is accompanied by an order from the owner, or unless the party presenting it is a member of his family or an old, well-known employee.

The war continues, therefore your duty also continues. It is your duty to buy a THIRD LIBERTY LOAN BOND, even if you have bonds of the First and Second Loans.

Water Whistle

BY FRANK HUSKINSON
Lafayette, Colo.

Central station power was installed at a certain mine. The power house was converted into a substation. As there was no necessity for keeping up steam, the use of the boilers and engines was discontinued. Then it was discovered that the steam whistle which had signaled



DETAILS OF PIPE CONNECTIONS AND WHISTLE

the time of starting and stopping work could not be sounded. I decided to try a scheme of blowing the whistle by means of water and air. The water tank was located upon a hill. The pressure at the boiler house was 85 lb., and we had plenty of water.

Part of the old exhaust line from the engines consisted of a 20-ft. length of 12-in. pipe, which extended vertically from the floor up through the roof of the boiler house. I removed the exhaust head from this piece of pipe and put on a special flange that reduced the 12-in. pipe to a 2-in. opening. Then I took a piece of 2-in. pipe 18 ft. long and secured the old steam whistle to one end of it. The other end I screwed into the opening on top of the 12-in. pipe.

On the bottom part of the 12-in. pipe I put in a blind flange. I also made a connection in the 12-in. pipe for a 2½-in. pipe. Into this opening I screwed a short piece of pipe. Onto this I screwed a tee, then another short piece of pipe and a gate valve. This was connected to the 4-in. water line from the tank. The outlet of the tee was then fitted with a short piece of pipe and a gate valve from which a section of pipe was run outside the building as a drain.

The accompanying diagram shows the details of the pipe connections and whistle. All joints were made airtight. The whistle was of a type that is operated by means of a quick-acting valve. This was opened by pulling a wire. The operation of the "water whistle," as it was called, was simple and quite satisfactory.

The valve for draining the 12-in. pipe was opened, also the whistle valve on top was held open, and all the water was allowed to drain out. Then the whistle valve and the drain valve were closed, and the valve on the water line was opened wide, allowing the water to flow into the 12-in. pipe. This was done about 30 sec. before the whistle was to be blown. Next the wire that opened the whistle valve was pulled, allowing the whistle to blow.

The action of the apparatus was as follows: The draining of the 12-in. pipe with the whistle valve open allowed the pipes to fill with air at the ordinary atmospheric pressure. As soon as water from the main was turned into the pipes, all other outlets being closed and airtight, the air inside the pipes was compressed to the pressure of the water, which is 85 lb. As soon as the whistle valve was opened the air that rushed through the whistle had almost as much effect on it as had the steam used formerly. The water entering the pipe kept the pressure almost constant, and the whistle could be blown for several seconds or for short blasts.

A LIBERTY BOND will soon become a badge of loyalty.

Expedients in Surveying Practice

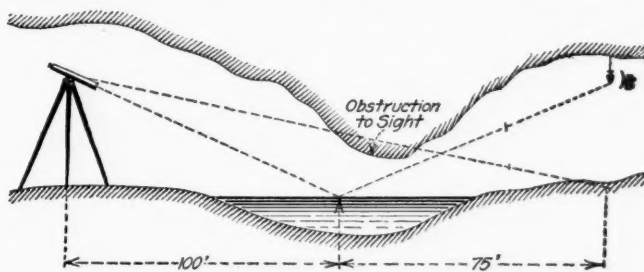
BY MINING ENGINEER
Punxsutawney, Penn.

The practice of surveying is often attended with difficulties that tax the ingenuity of the engineer to overcome without loss of time. The incident I am about to recite occurred recently when making a survey of an old mine. Being one of the party, I was much interested and impressed with the ease with which the transitman overcame what would, but for his ingenuity, have proved a serious and delaying obstacle.

As illustrated in the accompanying figure, at one point in the entry there was a deep swale where water had collected to a depth of 2 or 3 ft. The sudden dip

and rise of the entry made it impossible for the transitman and head-sight to see each other. However, taking advantage of the reflection of the head-sight's lamp in the water, the transitman ordered him to hold his lamp immediately behind the plumb bob, which was suspended from the point in the roof. This being done, the transitman sighted his instrument to the reflection of the bob in the water.

The trick set me to thinking and I wondered if it would interfere with the accuracy of the sight if the



SIGHT TAKEN TO OBJECT REFLECTED IN WATER

lamp should be held a little to one side or the other of the plumb bob. The manner in which the survey checked, however, showed that the scheme adopted by the transitman was correct.

Studying over the matter, later, I found that as the surface of the water was level, the line of sight was in a vertical plane passing through the instrument and the plumb bob, and the result would have been the same if the transitman had been able to take his sight directly through the plumb bob. The expedient was, to my mind, an interesting one that is well worthy of mention, as it will often be of assistance to engineers when surveying mines under such conditions.

The boys in the trenches feel more confident if they know the folks at home are backing them.

Loosening the Journals

BY HENRY M. PAYNE
Pittsburgh, Penn.

In severe weather, such as has been experienced this winter, it is sometimes found difficult to move freight cars on sidings both above and below the tipples because of cold journals. This may be overcome by pouring about ¼ pint (no more) of ordinary coal oil or kerosene into each journal box. The car may then be started with a pinch bar, and if the grade is sufficient to permit the car to run in summer it will move equally well even in severe weather.

The company with which I am connected has tried this method when the thermometer stood at 15 deg. below zero, and the results were such that car movers, teams, etc., have been done away with. The total cost is about 6c. per car; the saving in time is about 95 per cent.

This treatment does no harm to packing or oil in the car journal and is exactly analogous to using a light oil in an automobile in winter instead of the heavy oil used in summer.

This method of limbering up car journals may not be new, but I never heard of it. We tried it as an experiment and hailed the result with joy.

Montour No. 8 Plant of the Pittsburgh Coal Co.

BY GEORGE W. HARRIS

Editorial Staff, "Coal Age"

THE Pittsburgh Coal Co., the largest miner of bituminous coal in the world, has a daily capacity of over 100,000 tons, or 32,000,000 tons each year. This company is the owner and operator of 100 active coal mines in the states of Pennsylvania, Ohio, Illinois and Kentucky. Nine-tenths of these collieries are located in the heart of the Pittsburgh district, and the fields are known as the Youghiogheny and Westmoreland. In this district the Pittsburgh company is the owner of about 190,000 acres of unmined coal, comprising the highest grade of gas, coking and steam fuel.

The seventeenth annual report of the Pittsburgh Coal Co., for 1916—the latest official source of information—states that 18,709,926 tons of coal were produced and handled during that year; the gross net earnings from all sources were \$5,592,798.80. Both production and net earnings would likely have been larger had the use of the facilities provided been permitted by the always dominant factors of labor and transportation.

On Apr. 1, 1916, practically a general suspension of work at the mines occurred. This continued for a period of about six weeks, a full month after the heavy Lake shipments usually begin. An unusual scarcity of cars then set in, which continued and was greatly added to by railway congestion with the result that, except during the first quarter, the company had no free shipping month during the year in question.

A map of the bituminous coal region of western Pennsylvania (Fig. 1) shows the location of the Pittsburgh Coal Co.'s mines and the line of the Montour R.R. The company's mines in the Youghiogheny and Westmoreland fields are joined by its own railroad, a line 150 miles in length. Connections are made direct with Lake Erie ports and to all railways east, south and west. Thus the distribution of the concern's product is provided for in such a way as normally to avoid all delay in transportation.

The Pittsburgh Coal Co. has established excellent facilities for loading coal into ocean vessels, for export shipments to South American and other countries, at the ports of New York, Baltimore, Philadelphia and New Orleans. The demands of the south and Gulf of Mexico ports are supplied by shipments down the Ohio and Mississippi Rivers. At the lower lake ports extensive and modern loading plants are operated by the company. Millions of tons of Pittsburgh Coal Co.'s gas and steam coal are forwarded during the summer months via the Great Lakes to its docks on Lake Superior and Lake Michigan, from where it is distributed throughout the west, northwest and Canada.

A large coal company like the Pittsburgh always has construction in the planning or under way. Old tipples require entire rebuilding on account of being worn out from long service, or the method of handling coal may be too antiquated. Then new properties are acquired

and developed to increase tonnage or maintain a steady production as old mines become exhausted.

A few years ago the Pittsburgh Coal Co. decided on extensive development in its First Pool section. Old First Pool Mines No. 1 and No. 2 hauled coal long distances to the tipples on the Baltimore & Ohio R.R. just above Willock station, owing to the coal near the tipple being worked out. About this time the Montour plants were projected and No. 8 tipple was designed.

Montour No. 8 plant is about 8 miles from Pittsburgh (see Fig. 1) as the crow flies, on the Lewis Run branch of the Montour R.R., some 2 miles southeast from Willock station on the Baltimore & Ohio R.R. The Montour line connects with the Pittsburgh & Lake Erie R.R. at the Ohio River. No. 8 plant was reached by the writer on a mine locomotive traveling through miles of old entries, in which could be seen thousands of tons of the best Pittsburgh seam—a sight that brought with it vivid recollections of coal lines in New York City waiting for their pitiful allowance of 25 or 50 lb. of coal on a bitter winter's day.

PACIFIC COAST TIMBER FOR TIPPLE

In looking around for building material the Pittsburgh Coal Co. discovered that steel could not be promised for delivery short of 12 months. In this emergency it was decided to use wood, and Oregon fir was adopted, shipments being made from the Pacific coast. This fir somewhat resembles coarse white pine in texture and is slightly pinkish in color. It was adopted by reason of its being strong, straight lumber, free from knots. Long sticks are readily obtainable.

Ordinarily, some objections exist to wood as building material, especially for tipples, their life being estimated at about 20 years when constructed of wood. As is well known, the Pittsburgh company has many fine steel structures. To secure greater permanence and prolong the life of the tipple, a wood preservative was used. Carbolineum was obtained from the Monongahela Wood Preserving Co., with offices in the Fulton Building, Pittsburgh, Penn. The source of this preservative is anthracene oil, a coal-tar product, whose worth has been proved by the test of years of service. The Monongahela company's product is made in America, and is used by many large railroads, telegraph, telephone and mining companies for open-tank and brush treatment.

Carbolineum has many advantages. The company in question guarantees every gallon and states that it contains no tar and is the most economical preservative to use as there is no loss on heating—the sun's heat drives the oil deeper. It is self-penetrating on account of its high capillary attraction in the wood fiber. It is also permanent in the wood, penetrating deeply without forming a film to crack or peel off. It is said to be the least volatile, most toxic to fungi after long exposure, and least soluble in water of all wood preservatives.

The French and the British have nobly stood behind their governments in war loans. Where do you stand?

The framing of the tippie consists of 12 x 12-in. posts, caps and sills, to which are bolted two pieces of 6 x 12-in timbers for diagonal and other bracing. The stringers are made up of two pieces of 6 x 16-in. sticks, between which and the caps are corbels. The main timbers are secured by 1-in. bolts, and $\frac{3}{4}$ -in. bolts are used on the bracing.

The coal from each mine is handled by its own dump, that from Mine No. 1 going to dump No. 1 with its own

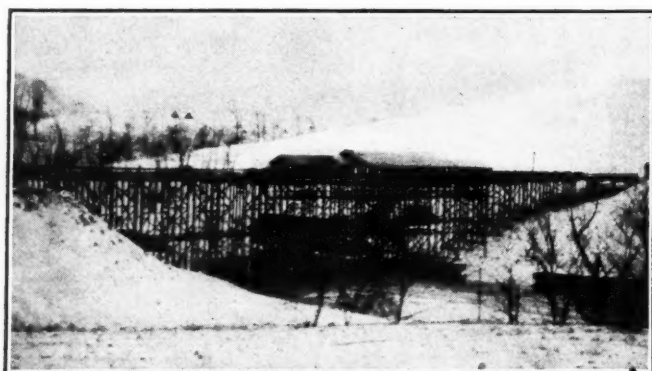


FIG. 2. MONTOUR NO. 8 TIPPIE—UPPER SIDE

set of chutes and screens; the coal from Mine No. 2 goes to dump No. 2 with its separate or combined equipment for loading cars. The dumps, chutes, screens, etc., with which the tippie is equipped for handling coal from mine dump to railroad cars, was furnished by the Phillips Mine and Mill Supply Co., of Pittsburgh, Penn., with one exception—the lump coal loading booms came from the Jeffrey Manufacturing Co., of Columbus, Ohio.

The course of the coal through the tippie is as follows: After leaving the mine car at the Phillips cross-over dumps, the coal runs into the mine-run weigh baskets which are built over the same dimensions except that the drop door of No. 2 discharges the coal in the opposite direction of dumping. The doors are automatic in operation, being opened by the weight of the coal and closed by means of the back balance weights. The doors are controlled by means of band brakes.

The coal, after passing over the lump screens, runs into chutes or baskets which discharge into radial chutes, these delivering the coal (at right angles to the direction it takes on leaving the mine cars) onto a picking table and loading boom. The radial chute has the advantage over the usual hopper in that the direction of the flow of the coal is not changed by bumping plates, but is turned gradually and easily by the curved chute. The weigh hoppers and all attachments are suspended underneath the floor on a 10-ton hopper scale of the suspension type, which leaves the floor above clear so that the men are not hampered or in danger of being crushed or injured between scale rods and car. The scales are also free from all interference or damage.

In these equipments the coal is spread out over the picking table by means of a weighted plate instead of by a reciprocating feeder. However, a feeder can be used if it is desired. The nut coal can also be delivered onto the picking table by means of a radial chute. As the nut coal is delivered onto the picking table first, it forms a cushion for the lump coal when $\frac{3}{4}$ -in. coal is being loaded. The fly in the top of the lump screen deflects the coal to a conveyor, which carries it to a locomotive coaling pocket when desired.

The cars on the lump tracks are loaded by loading booms with $\frac{1}{4}$ -in. lump, $\frac{3}{4}$ -in. lump and mine-run coal. To load run-of-mine coal, the screening surface of the lump screens are covered by doors. The third loading track receives nut, nut and slack, or slack, from both No. 1 and No. 2 equipment. Track No. 4 receives slack or nut and slack from both rigs.

Fig. 6 shows a car stop or trip controller back of the dump that gives the man at the dump full control of the cars coming into the dump. After a loaded car has passed through the car stop, it depresses the treadle ahead of the stop, closing the horns of the stop which are automatically locked; the main trip of cars advances until it runs against the car stop. When the dumper is ready for another car, the man in control releases a spring by means of a conveniently located foot treadle; the spring opens the stop, allowing another car to pass through. This device is also manufactured by the Phillips Mine and Mill Supply Company.

Mechanical provision has been made to facilitate moving both empty and loaded cars on the Montour tippie. An endless $\frac{3}{4}$ -in. rope haulage system moves empties from the tippie to a point where the mine locomotive attaches to the trip. This method of gathering empties is in duplicate on each side of the tippie; each system is independently motor driven. The loaded cars are moved by chain car hauls.

Ample provision has been made to guard against fire. Three-inch pipe connects with a large tank on the top of a near-by hill, giving a head of 120 ft. at the tippie dump. This pipe system also connects with the pump supplying water to the tank, so that there are actually two sources of water supply in emergency. The tippie is well covered by this water system, and valves and hose are located at various convenient points on the structure.

As noted, the tippie is supplied with coal from two openings, one on either side of the valley in which the

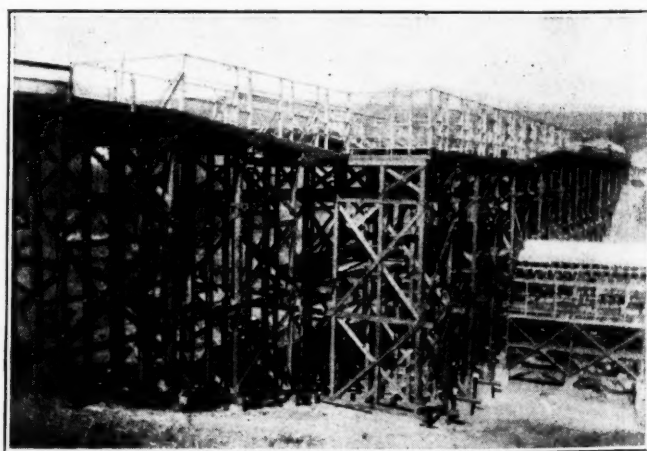


FIG. 3. MONTOUR NO. 8 TIPPIE DURING CONSTRUCTION

plant is located. The Pittsburgh No. 8 seam is mined and here attains a thickness of about 4 ft. 8 in. The "bands" run from $\frac{1}{4}$ to 1 in. in thickness and are from 14 to 18 in. above the bottom. Over the seam is 8 to 12 in. of fireclay drawslate; then 18 to 24 in. of top coal, over which is the main top rock of soapstone or shale.

Fig. 2 shows the nature of the country in the vicinity of Montour No. 8. The topography includes low hills and numerous ravines. The coal seam has only about

150 to 250 ft. maximum cover and the continuity of the seam is much broken up by the ravines. This "lay of the land" determines largely the mine development. Main or face entries are driven, and from these are pairs of butt entries on about 580-ft. centers. This permits rooms to be driven on the face of the coal, thus facilitating mining. Rooms are 24 ft. wide and pillars 15 ft. A 100-ft. pillar of solid coal is left on each side of face entries as protection. In robbing pillars, one pillar is kept about 16 to 18 ft. back of the

In connection with haulage, attention is directed to the plan of the tippie (Fig. 4) and the track layout from the mines to the dumps at the tippie. The three parallel tracks greatly facilitate handling trips. The motor brings in the loads on the track so indicated and readily attaches to the empties, made up in a trip on its siding, by means of the third open track. In Fig. 3 the plan for facilitating the movement of loaded cars near the dumps is shown. This is partly accomplished by increasing the grade over a space of several bents on

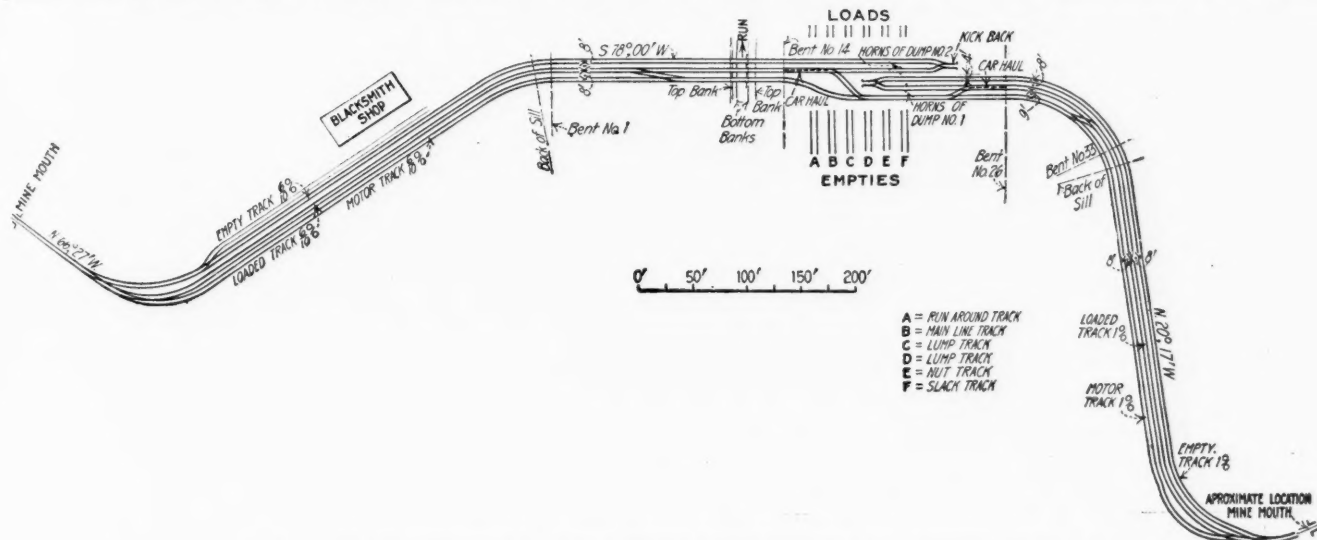


FIG. 4. PLAN SHOWING TRACKS FROM MINE MOUTHS TO DUMPS AT TIPPLE

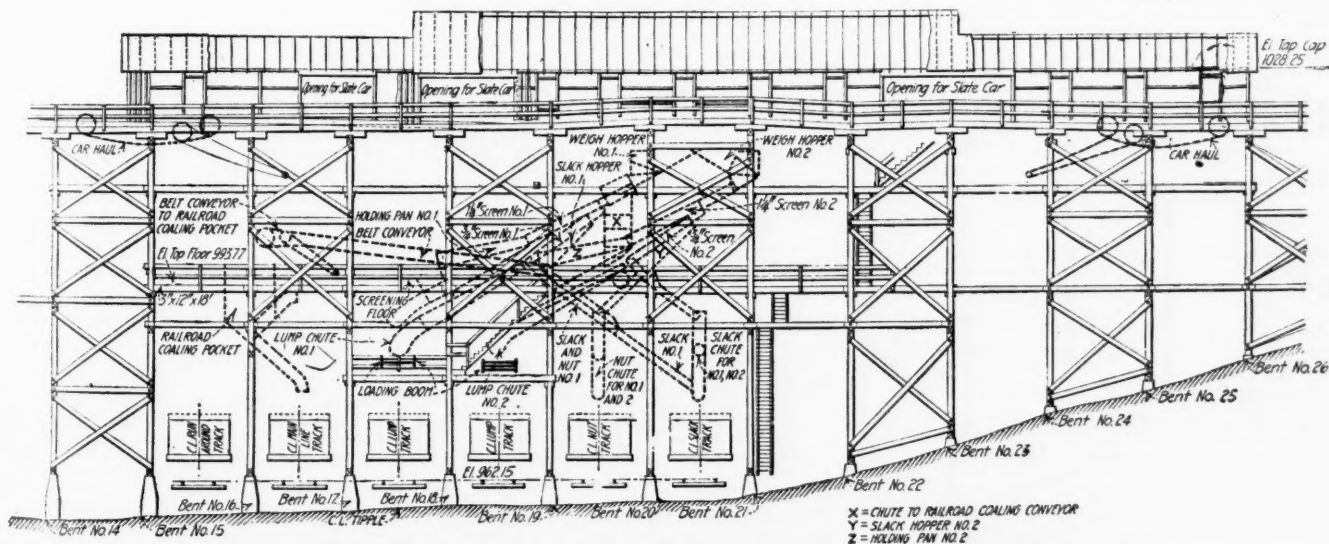


FIG. 5. ELEVATION AT TIPPLE AND LOCATION OF COAL-HANDLING APPARATUS

adjoining pillar to secure a diagonal break across the workings and protect those doing the robbing.

The mines are electrically equipped and soon all coal is expected to be moved by motors. Four-ton storage-battery gathering locomotives are being installed; two are operating here now, and others will follow until mules are entirely replaced in these mines. Trips of loaded cars are hauled to the tippie by three motors—one Westinghouse and two of Jeffrey make. Sixteen Morgan-Gardner electric machines undercut the coal. Power is furnished from a central station, being transmitted from a distance at high voltage. At substations the electricity is converted and transformed to the usual mine direct-current of 250 volts for machines and 500 for haulage.

the loaded tracks. These grades, on either side of the center of the tippie, show in the broken line of the stringers on the floor of the top of the tippie.

The capacity of the Montour No. 8 plant depends on the mine development, number of miners, facilities for shoving cars through the Phillips dumps, and railroad cars at the loading chutes. The mines are under development and miners are employed as they present themselves as applicants for rooms. Haulage facilities are being strengthened by the purchase of additional gathering motors.

The two Phillips crossover dumps will easily handle four two-ton cars per minute. Strictly speaking, the capacity of the dumps is not the sole limiting factor in the amount of coal handled over the screens, but rather

the mine-run weigh basket. The Phillips company claims that its dump can readily handle six cars per minute, but to dump, weigh and properly screen the coal, the basket will handle just about four cars per minute. If the coal is not screened, speed of operation can be increased.

The uncertain factors in the matter are labor and transportation. Were it not for these elements, the production of a mine in the Pittsburgh district under average conditions would be almost unlimited. The coal from 1600 acres of new ground is planned to be handled by the No. 8 plant.

In working out the details for the plant just described, the Pittsburgh Coal Co. had in mind further and similar development in the First Pool section. One or more Montour plants are under way or contemplated

Cornstarch-Asphaltum Binder for Briquets*

BY BURKE BAKER
Philadelphia, Penn.

The American Briquet Co. has built a small plant for briquetting coal at 25th St. and Washington Ave., Philadelphia, primarily for demonstration purposes. Its output per hour is 4 tons of 2-oz. briquets, which have been retailed in the vicinity during the year that the plant has been in operation. They have proved very acceptable for use in the ranges, heaters and grates of homes, and in the steam-heating plants of apartment houses and hotels. None of these briquets has been sold for power purposes, although satisfactory tests have been made in this field. Anthracite silt is used and is shipped direct from breaker or washery, the only prepa-

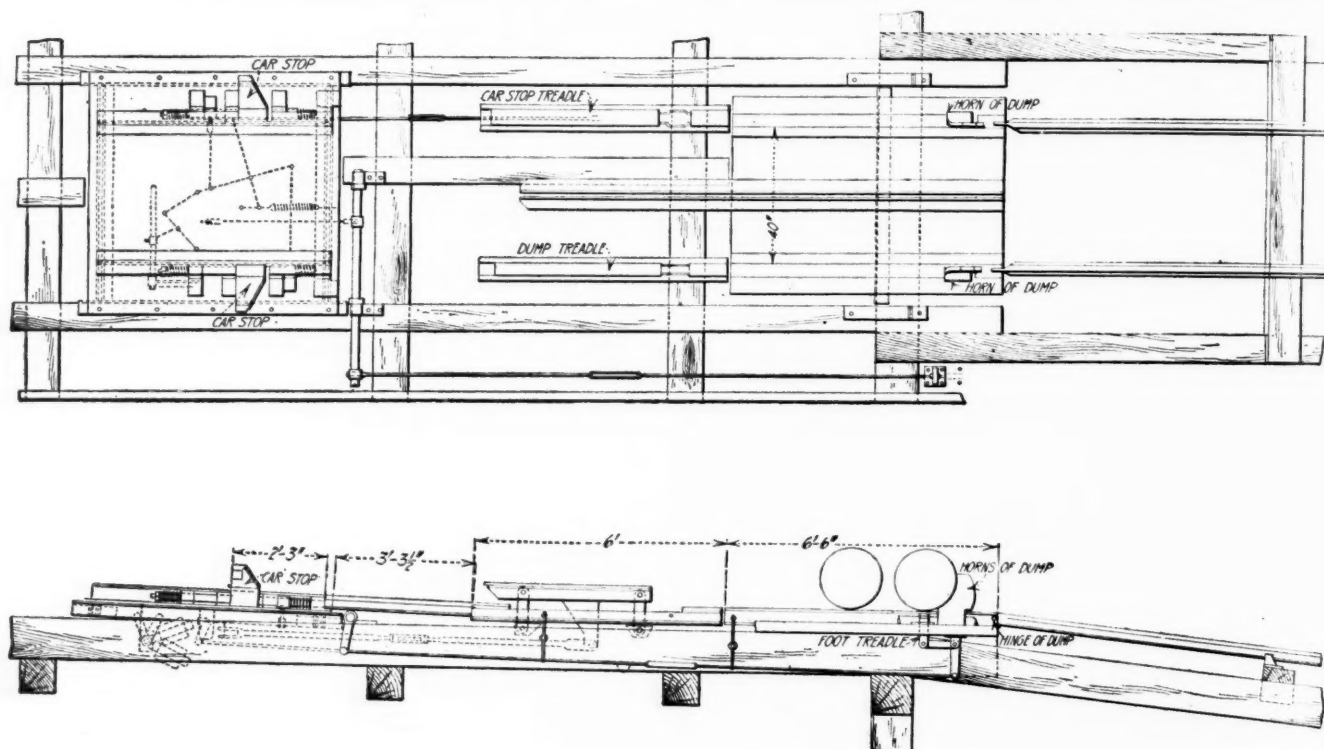


FIG. 6. CAR STOP OR TRIP CONTROLLER NEAR THE DUMP

—a shipment of Oregon fir is expected for another tipple which is to be similarly treated with carbolineum.

In the preparation of this article, *Coal Age* is greatly indebted to E. J. Taylor, chief engineer of the Pittsburgh Coal Co., and his assistants, H. L. Auchmuty and E. S. Taylor, for courtesies extended to the writer facilitating the gathering of information and for the privilege of visiting their plant. At the Montour No. 8 colliery H. D. Thompson, superintendent, and D. J. Ryan, mine foreman, gave every opportunity to inspect mines and tipple and furnished much interesting information. Acknowledgment should also be made to the publicity department of the Pittsburgh company for reports and pamphlets.

The enemy buys bonds so that his soldiers may be well equipped for the struggle. Your failure to invest in THIRD LIBERTY LOAN BONDS may result in death or injury to an American fighter.

ration it receives being the removal of excess moisture by means of a Ruggles-Coles rotary dryer. Care is taken, however, to purchase silt that contains less than 18 per cent. ash.

The method of briquetting is covered by U. S. Patent No. 941,454, issued to Charles E. Hite, and is known as the "emulsion process." The binder, which is the basis of the patent, is composed of 0.5 per cent. cornstarch or wheat flour; 1 per cent. asphaltum or hydro-lene, and 6.5 per cent. water, the percentages being based on the weight of coal dust. It is prepared in a tank equipped with paddle agitators and heated by steam jets. The starch and water are first made into a paste and brought to the boiling point by live steam; the melted asphaltum is then introduced and thoroughly beaten into the paste by the agitators. This rapid stirring breaks the hot asphaltum into minute particles

*Discussion of a paper presented at the New York meeting of the American Institute of Mining Engineers, Feb. 18, 1918, and entitled "The Briquetting of Anthracite Coal." This paper was printed in "Coal Age," Feb. 9, 1918, page 278.

Three periods urge purchasing LIBERTY BONDS: Past, for the gift of Democracy; Present, for our boys in France; Future, for the safety of the world.

which are distributed through the paste, producing a smooth chemical emulsion. This emulsion, when dried, is not soluble in water.

The binder is mixed with the dry coal dust in a horizontal paddle mixer, 8 parts by weight of binder being used for 100 parts by weight of coal dust. The resultant plastic mass is then discharged into the press, which is of the simple roll type. Since the binder is a liquid and is not sticky or gummy until partly dried, it is readily mixed with the coal dust in a fairly uniform manner.

From the press, the briquets are conveyed to a drying oven. Here they are distributed 6 in. deep over a broad screen-conveyor which passes through a "tunnel" constructed of hollow tile. Through this tunnel and up through the layer of briquets, a current of air is drawn by an exhaust fan at one end of the dryer, the air having been heated to approximately 225 deg. F. by a furnace at the other end. The speed of the screen-conveyor is such that the briquets are in the dryer one hour before they are discharged into an elevator which carries them to the loading chutes. This dryer is similar in design to those used in the textile industry and in the drying of ores.

The briquets thus made constitute a thoroughly satisfactory fuel for use wherever the prepared sizes of anthracite are consumed. They are water-proof and weather-proof; they withstand rain, freezing and thawing, the hot sun, or the heat of a boiler room, or all in succession. They are hard and tough enough to withstand rough handling, and can be piled in large quantities without softening or sticking. They hold their shape in the fire until completely consumed, and do not soften or fuse at any time. They are practically free from odor or smoke, and are entirely free from fumes or gases that hurt the eyes or skin, or injure flues and grates. The emulsion process has certain distinct advantages, which may be outlined as follows:

The total cost of binder, of drying, and of interest and depreciation on additional equipment in the emulsion process, is 65c. per ton of briquets. On the other hand, the cost of the asphaltum binder, estimating 7 per cent. to the weight of briquets and \$17.50 as the price of hydrolene, is \$1.22 per ton. Thus there is an actual saving in the cost of manufacture of 57c. per ton.

The emulsion binder, with its 1.5 per cent. of outside raw materials, instead of 7 per cent., greatly reduces the dependence upon outside sources of supply, thus avoiding many shutdowns due to delayed deliveries of asphaltum.

An asphaltum of a high melting-point and low penetration is required in the oil process. This is produced by only one or two of the large refineries. In the emulsion process, any grade of asphalt from crude petroleum to that having the highest melting-point can be used, thus permitting the purchase of the lowest-priced product from any refinery. The other raw material— $\frac{1}{2}$ per cent. of cornstarch or wheat flour—can be bought in the open market and from many sources.

By using only 1 per cent. instead of 7 per cent. of oil, the objectionable features of smoke, odor and soot are

correspondingly reduced. The amount of smoke or odor produced by the 1 per cent. of asphaltum in its emulsified form is almost negligible; and there is no soot whatever.

The emulsion-binder briquets do not soften under heat. They can therefore be shipped in hot weather and to any latitude without danger of sticking in the cars; they can be stored in large quantities in summer without softening, and they do not soften and fuse in the fire, even under forced draught.

The emulsion process is not so simple as the asphaltum process, since the preparation of the binder and the drying of the briquets, although simple enough in themselves, require additional equipment. But this is compensated by the greater ease of mixing the binder with the dust. The "masticator" is unnecessary and the need of keeping the flux at the proper temperature is obviated. On the other hand, the lower cost of production and the superior character of the product would seem to mark this as a forward step in the industry.

The American Briquet Co., after having operated its small plant in Philadelphia for a year, and having thoroughly proved the quality of the product and the practicability of manufacture on this small but commercial scale, is now making contracts for the erection of a plant of 50 tons per hour at Lykens, Penn., where arrangements have been made with the Susquehanna Collieries Co. for a supply of the silt produced by the colliery at that point.

The Methanophone

A young Welsh professor in London has recently perfected an invention with which he hopes to relieve considerably the mineworker from the fear of methane gas. The little instrument has been appropriately named the "Methanophone."

It consists of a small wooden box about 9 in. in height, containing an electric battery. At the top of the box is a fuse head cap upon which a tiny light always glows from the battery beneath. As soon as a certain low percentage of methane gas enters the workings its presence causes a tiny explosion in the fuse head, the explosion in turn melting a fine wire filament, which starts a bell to ringing continuously. The men in the vicinity are thus notified that gas has made its appearance and can take the necessary precautions. Officials of the Miners' Federation of Great Britain have witnessed effective tests of the methanophone.

If we help Uncle Sam by buying LIBERTY BONDS, we help ourselves. The buying of LIBERTY BONDS resolves itself into an expression of the highest form of intelligent self-interest. A British sergeant told a cocky young American, just off a troopship, "You aren't fightin' to save France an' you aren't fightin' to save Belgium; you're jolly well fightin' to save your children and your grandchildren." The same line of reasoning applies to the buying of LIBERTY BONDS, for in the last analysis you aren't buying them to help a mythical old gentleman in a be-starred swallow-tailed coat and striped trousers who is having a lot of trouble purchasing ships and shoes and sealing wax; you're jolly well buying them to help yourself.

Drifton Breaker of the Lehigh Valley Coal Company*

By EFFINGHAM P. HUMPHREY

Assistant Superintendent, J. S. Wentz Co., Upper Lehigh, Penn.

THE Lehigh Valley Coal Co. finished the rebuilding of its Drifton No. 2 breaker at Drifton, Penn., in the summer of 1917. The new construction comprises an addition and the complete remodeling of the old breaker. It is of interest to note that the old structure was the first iron breaker erected in the anthracite region. This old breaker was built by the Cross Creek Coal Co., under the direction of the late Eckley B. Coxe, in 1888-89, and was fully described by him in the *Transactions*¹. The columns were cast iron, 8, 10 and 12 in. square. The floors and partitions in pockets were cast-iron ribbed plates. The struts were cast iron of "H" section; the other members were of structural iron either rolled I-beams or built-up sections. The sizes of the rolled beams varied from 6 to 20 in. deep, while the built-up sections, made of plates and angles, varied from 6 to 63 in. in depth, so that there apparently was no rule to determine the type of section used.

In the remodeling of the old structure, practically everything was taken down except the columns and roof, and such beams as were necessary for temporary construction purposes, and therefore a close inspection of the old structural members could be made and the effect of the acid water on them could be noted. The cast-iron members were but slightly attacked by the water, while the wrought-iron beams, in the wet places, were corroded almost to failure.

The following are analyses of cast-iron, wrought-iron and structural-steel samples taken from the old and the new structure:

	Si	S	P	Mn	C
Old part, rolled structural iron.....	0.13	0.06	0.29	0.013	0.17
New part, rolled structural steel.....	0.03	0.04	0.11	0.240	0.26
Old part, cast iron.....	1.18	0.12	0.93	0.229	...
New part, cast iron.....	2.41	0.13	0.72	0.280	...

The mine water contained 71.79 parts per million of free sulphuric acid and 320.88 parts per million of total sulphuric acid as sulphates. The temperature of the water was 72 deg. Fahrenheit.

The depreciation of a structural-steel breaker for dry preparation is unknown, but is estimated at 1.25 per cent., while for a breaker using acidulous mine water during preparation I estimate the depreciation at 4 per cent., as determined by the life of the steel in the old Drifton breaker, which was 26 years. This figure may be high, for repairs and replacements to broken beams, due to corrosion, were frequently made in the old Drifton breaker. Water-tight construction of chutes and hoppers, to prevent the water from coming in contact with the iron, would certainly have prolonged its life; but little or no attention was given to this when the old breaker was built; in fact very little water was used then as compared with the quantity now required.

An interesting phenomenon was noticed in the effect of the corrosion where wrought and cast iron were in

contact in the presence of the acidulous water. In such instances the corrosion of both pieces was more rapid than separate pieces under the same condition. It may be probable that the action was assisted by a very weak electrolytic action caused by the slight difference in the metals. Slag holes in the casting showed more rapid corrosion than any of the other places, probably due to the same action.

The new addition is a modern fireproof structure built of structural steel with corrugated metal roof and siding, steel window frames and concrete floors. There are 332 tons of structural steel, or 1.35 lb. per cu.ft. of breaker volume, distributed as follows:

	Tons
Columns.....	67.0
Pockets and beams.....	192.0
Stairs and treads.....	8.5
Bracing.....	16.5
Roof.....	20.0
Girts.....	22.0
Miscellaneous, rivets, etc.....	6.0
	332.0

The average length of column is 72.5 ft. and the ground area 6730 sq.ft. The cubical contents is 48,792 cu.ft. The roof area is 7400 sq.ft. and the metal sides 18,500 sq.ft. The floors are 3½ in. thick, of concrete laid on deep-rib Hy-rib. The hoppers, chutes and jigs are of wood and waterproofed to protect the iron work from the mine water. The structural steel was painted with two coats of red lead and graphite paint. The arrangement of the jigs along each side of the breaker gives them the maximum amount of light. The machinery and shafting are accessible, and the rope drives are located in one bay, not scattered throughout the addition, as is frequently the case. The building is well lighted throughout and contains 6700 sq.ft. of glass.

The cast-iron columns of the old breaker were practically the only members re-used. New columns, girts, machinery supports, hoppers, chutes and stairs are of wood. Distortion of the old structure and the difficulty of plumbing it prohibited the use of steel except at great expense. The worn-out sheet-metal sides and roof were duplicated, using 16,500 sq.ft. of siding and 5720 sq.ft. of roofing. Its cubical content is 389,000 cu.ft. The window area is 5700 square feet.

The new plant at Drifton was built under the direction of Paul Sterling, mechanical engineer, Lehigh Valley Coal Co., and is designed to prepare 1500 tons of coal in an 8-hour working day. The author was engineer in charge of the entire remodeling and construction.

The new preparation plan (Fig. 1) required more height than was available in the old breaker; additional height was obtained by using elevators, and the addition was erected without seriously interfering with the

*Paper presented at the February meeting of the Institute of Mining Engineers, New York City.
¹(1890-91), 19, 398.

There will be joy in Washington and gloom in Berlin if the THIRD LIBERTY LOAN is a success.

operation of the colliery. While the use of elevators to handle prepared coal is not recommended, yet the conditions at Drifton did not warrant the adoption of a plan involving a shutdown, or the expenditure required to replace the entire old breaker by one that was new and costly.

The best daily output to date is 1735 tons, and it is expected that the breaker will be able to prepare and load 2500 tons daily. At present, the average dump is approximately 600 mine cars a day, 35 per cent. of this coming from the Lattimer stripping. This coal is of medium quality, one-half being good big-vein coal, and the other half of poorer quality that is mined from a small vein containing about 15 per cent. of divider rock. Three per cent. of the input comes from the Buck Mountain stripping, and is a very poor grade of coal, shaly and full of clay; the remainder of the breaker input is mine coal, hand loaded and of good quality.

The force on preparation is as follows: One breaker

boss, 1 jig boss, 1 picking-table boss, 1 ticket taker and docking boss, 2 dumpers, 4 pickers on platform, 3 pickers on broken coal, 2 pickers on jig refuse, 2 jig runners, 4 machinery attendants (screen men and roll tenders), 1 breaker engineer, 1 oiler, 1 ropeman, 1 breaker cleaner; total 25 men. The force loading coal and charged against loading is: One loader engineer, 4 loaders, 2 runners; a total of 32 men in the breaker.

One man attends the rock crusher in the breaker, but part of his time is charged against the disposition of refuse. The rock crusher is driven by its own engine, so that it may be independent of the breaker, which permits of refuse disposition after quitting time, a necessary measure because rock may accumulate on the picking head when there is an interruption in the operation of the refuse conveyor.

The method of elevating the run-of-mine coal in the remodeled breaker was not changed from that originally devised and installed by Mr. Coxe. There are two

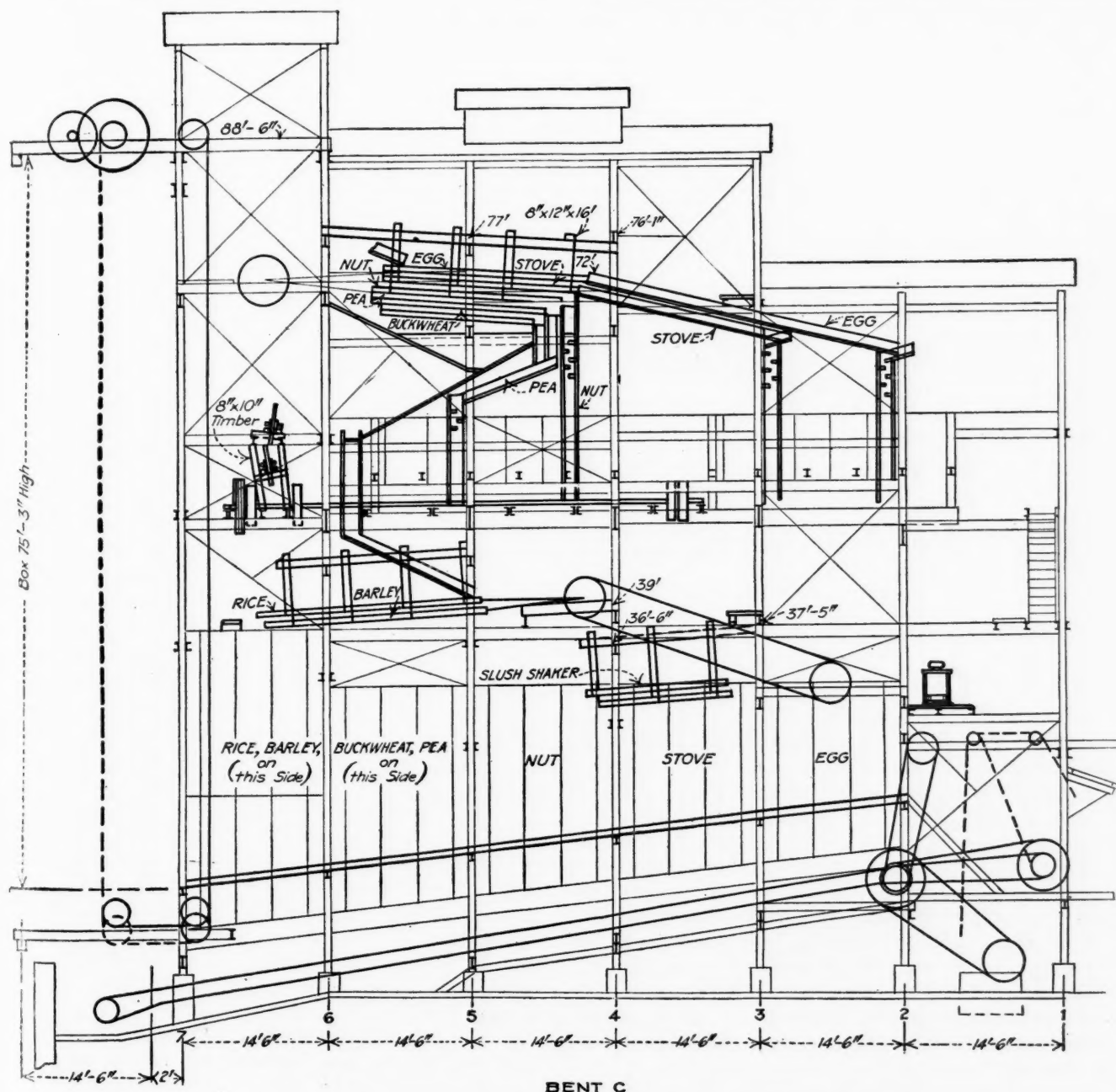


FIG. 1. NEW SCHEME OF PREPARATION, DRIFTON BREAKER

speed re-breaker, or No. 3 mud-screen roll, which breaks to egg, stove and smaller. The spiraled mud-screen egg flows to its No. 3 roll, or, when there is a demand for it, the egg is switched around the roll. The entire mud-screen product from both of the No. 3 rolls, also the egg (when not broken down) is mixed in the mud-screen coal elevator feeding pocket, a duplicate of the one for the pure coal.

Two elevators, one for pure and one for mud-screen coal, lift the products from the elevator feeding pockets to the top of the new addition (Fig. 2). There are four banks of five-deck shakers, arranged parallel. The two outside banks are for pure coal and the inside banks for mud-screen. At present (as already mentioned) no pure coal is made, as it has been found cheaper to remove refuse by jigging. This method of preparation will be continued until the quantity of the run-of-mine is increased to such an extent that it is necessary to make a pure-coal product, or if the quality of the present run-of-mine should change, producing a tremendous quantity of large lumps of pure coal, then the hand-picking force will be increased in order to clean the product on the moving tables.

With the present plan, the elevated pure and mud-screen products are dumped into the mud-screen bifurcated chute delivering to the two mud-screen shakers (the outside, or pure-coal shakers, are not operating). These shakers size egg, stove, chestnut, pea and buckwheat. Each size flows into its respective jig storage pocket. The jig pocket acts as a reservoir behind the jigs, storing up during rush periods and feeding out when no coal is coming. These pockets are equipped with adjustable partitions, arranged so that the capacity of any one pocket may be increased, by decreasing the capacity of the adjacent one. The partitions are changed to accommodate the quantity of each size made, and thereby increase or decrease the number of jigs on any one size, where it is necessary to handle a greater or lesser quantity of any size to meet the varying market demands. For example, when breaking down all coal to stove and smaller, no egg jigs are needed; therefore egg jigs can be run on stove, and vice versa.

The coal from the jig pockets flows to the jigs. These are equipped with automatic starting and stopping devices, actuated by the weight of coal in the chute, connecting the jig pocket to the jig, and operating a belt shifter through a system of levers. By means of this control, jigs will stop when no coal is coming and the jig pocket is empty, and will start up as soon as the feed starts again.

The clean coal from the jigs gravitates to the loading pockets, while the refuse is conveyed to the refuse-conveyor line. The coal is loaded into cars by a belt conveyor, which system was first used in the anthracite region by the Lehigh Valley Coal Co. The pocket gates differ from those previously used in being located at the end of the chute leading to the belt instead of several feet up the chute, at the point where the chute enters the loading pocket, thereby reducing the initial break-

The boys at the front need your assistance now as they did in the Second and First Loans. Do not fail to buy another LIBERTY BOND because you already have one.

age resulting from the sudden rush of coal down the chute when the gate is opened, and permitting the use of a lifting check gate rather than a cutoff gate. The latter gate requires more power to operate than the former and was steam operated on previous installations of the company. The latter is opened by the weight of coal against the gate, when the operating chain is raised and closed by the belt loader operator, who pulls a chain connected to the gate.

The rice and smaller from the buckwheat shakers flows to two banks of two-deck shakers, sizing rice and barley. The material falling through the lower deck flows to settling tanks. The chutes from the rice and barley shakers are arranged so that both or either size may go to its respective loading pocket, or to the boiler-house conveyor line.

The jig slush or hutch product is delivered on a single-deck shaker, the material passing over is conveyed, together with the lip screenings, to a screening storage pocket. The product falling through goes to the settling tanks. Condemned coal is dumped into a hopper connected to the foot of the elevators by a conveyor. This conveyor will deliver to either the pure or the mud-screen coal elevator, by changing a switch in the discharge chute. Coal condemned for impurities can be switched to the mud-screen elevator, while coal condemned for screening can be sent to the pure-coal elevator. The condemned-coal conveyor also handles the lip screenings from their storage pocket. When the pocket is full, the conveyor is started and operates until the pocket is empty. When it is necessary to make a pure-coal product, the pure-coal elevator will discharge into the pure-coal bifurcated chute leading to the outside pure-coal shakers. The sized coal from the shakers will mix with the clean coal from the jig and flow to the loading pockets.

No controls to handle the coal in the old breaker have been installed, as usually the product is unsized and the breakage is practically nil. Abrupt turns and high drops are avoided as much as possible.

Elevator breakage is minimized by proper feed at bottom and proper discharge at the top. In the addition, White chute controls are used where thought necessary and vertical stepped telegraphs for lowering into jig and loading pockets. Spiral chutes are installed to lower pure coal. A movable pocket-filler chute is used on broken. Loading gates are as previously mentioned. The adjustable boom on the end of the belt conveyor, with curved chute, prevents a high drop into cars and assures a fairly uniform distribution of any screenings through the loaded car.

Water for preparation is required in the addition only. It is pumped direct from the mines to a 6000-gal. wooden storage tank, placed in the top of the old breaker. A cast-iron distributing main is connected to the bottom of the tank; branch lines run from this main: (1) to the pure-coal and mud-screen shakers; (2) to the jigs and (3) to the lip screen. Outlets are placed throughout the breaker for hose connections for

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washing down, and for fire; cutout valves are placed on each branch line. At present, an outlet is furnished for each jig, but this is to be changed to an automatic jig-filler trough. This arrangement consists of a trough running back of the jigs with a 3-in. cast-iron connecting pipe leading from the bottom of the trough to each jig.

A connection will be made from the distributing main to the trough, with an automatic float valve on the end arranged to maintain a constant level of water in the trough. The trough will be filled with water up to a height to balance the water in the jigs through the connecting pipe. If the height of water in any jig falls below the proper level, water in the trough will flow into the jig and the automatic float valve will open and the water fill the trough until the balance is reached, when the automatic float valve will close. This arrangement maintains a constant water level in the jigs and results in better jigging due to the uniform conditions. It should also result in a saving in the quantity of water used by the jigs, as compared to the amount used when inefficiently controlled by hand.

CHANGES IN METHODS OF PREPARATION

The machinery in the old structure was the subject of an article by E. B. Coxe², 1890. It is interesting to note the changes in the methods of preparation. The more modern plants have more machinery and less men for the same tonnage even though the quality of the coal in many cases is poorer.

In the Drifton breaker shakers are made of 3 x 6-in. wood sides with 3½ x 3½ x ½-in. cross-frame angles, suspended by 1 x 6-in. hanger boards. They are driven by 3-in. throw eccentrics at 150 r.p.m. connected to the shaker by 3 x 6-in. Parrish flexible wood arms. The shakers are 4 ft. and 4 ft. 6 in. wide by 15 to 24 ft. long.

Rolls are of the slow-speed type, 36 x 36-in., compound geared with cast-iron chilled teeth built up in segments. The peripheral speed is 300 ft. per minute and they have a capacity of about 300 tons an hour.

The jigs are the Simplex pan type, running at 137 r.p.m. with automatic slate gate and automatic starter. There are 20 jigs placed back to back in two rows of 10 each, facing opposite sides of the breaker, affording excellent light for refuse and coal inspection. At present there are five jigs for egg, four for stove, four for nut, three for pea and two for buckwheat. Jigging results for the month of October, 1916 (189.5 working hours), were as follows:

Size	Tons	Tons per Hour per Jig
Egg.....	5,212	5.5
Stove.....	7,342	7.7
Nut.....	5,152	6.8
Pea.....	2,038	5.4
Buck.....	3,773	9.9

The delays for "no coal" for the same month were 24½ hours, but these are not considered in the results given in the foregoing table.

The average percentages of coal and chipped coal in the refuse for the same month were as follows:

Size	Per Cent. Coal	Per Cent. Chipped Coal	Average Per Cent. Pure Coal for Prepared Sizes	Average Per Cent. Pure Coal All Sizes
Egg.....	1.00	0.89	1.14	1.25
Stove.....	1.12	0.50		
Nut.....	1.50		
Pea.....	2.90		
Buck.....	3.75	3.38	

The only hand pickers on refuse from the jigs were two boys on egg coal. During that month one car of chestnut was condemned for stained coal and one-half car of chestnut for screenings.

The number of tons per jig per hour for the best day (1735 tons total) with no coal condemned and 1 hour delay for "no coal" was as follows:

Size	Tons per Hour per Jig
Egg.....	7.4
Stove.....	7.5
Nut.....	11.7
Pea.....	11.0
Buck.....	14.7

On this day there were four jigs for egg, six for stove, five for nut, two for pea and two for buckwheat.

All the conveyors have 6 x 18-in. flights with 9-in. pitch Keystone chain. The elevators have 22 x 25 x 12-in. buckets at 18-in. centers with two strands of 9-in. pitch heavy pattern Keystone chain. The elevators travel 90 ft. per minute and have a capacity of 200 tons an hour.

The moving picking tables, 4 ft. 6 in. wide, are of the overlapping pan type and run at about 30 ft. a minute. Each table is equipped with a friction clutch for starting and stopping and a moving apron discharge chute.

The breaker engine is an 18 x 36-in. double reversible Corliss valve type, noncondensing, running at 100 r.p.m. belted to the main lineshaft by a 24-in., 10-ply rubber belt. The average indicated-horsepower is 272 loaded and 165 when running light. This power is distributed approximately as follows:

1 Feeder.....	2
2 Banks dump shakers—8 single shakers.....	16
1 Crusher roll.....	12
2 Tables.....	8
2 Banks pure-coal shakers—4 single decks.....	8
2 Sets No. 3 re-breakers.....	18
2 Elevators.....	65
2 Banks shakers, two of 2 decks, two of 3 decks.....	20
18 Simplex jigs.....	72
3 Sections of refuse lines—174 ft.....	19
2 Banks rice and barley shakers—4 single decks.....	8
1 Bank slush shakers—2 single decks.....	3
1 Condemned-coal line—200 ft.....	29

The above figures are the indicated-horsepower for each machine at the engine and include the friction of lineshafts and drives.

Several of the drives from the main lineshaft are equipped with friction clutches. These drives are arranged so that combinations of machines may be operated while other combinations are momentarily stopped for attention or repairs. Generally speaking, all rope sheaves are 60 in. in diameter for 1½ in. manilla rope, and belt pulleys are 48 in. in diameter. In the addition rope drives are used exclusively between the main lineshaft and the main countershafts.

The feeder is built like the shakers, but is fitted with

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²Transactions (1890-91), 19, 398.

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blank plates and is driven by adjustable-throw eccentrics in order to vary the feed.

The loading belt conveyor is a 36-in. by 6-ply $\frac{1}{2}$ -in. rubber-covered belt, running on Robins troughing and return idlers. The speed ranges from 300 to 500 ft. per minute, according to the size of the coal handled, and is adjusted by hand control of the 8 x 10-in. driving engine; the larger the size of coal, the slower the speed.

A gravity return system is used for steam heat, the returned condensed steam being wasted. The pipe radiator coils consist of 15,300 lin.ft. of 2-in. pipe, or 155 cu.ft. of breaker contents per foot of 2-in. pipe. Exhaust steam from the breaker engine is used when operating; live steam at other times.

The addition was erected over the old loading tracks, and clearance was provided for admitting the cars through the addition during the operation by omitting some of the structural steel. A new loading track was built in front of the addition, and the loading belt conveyor erected. New holes were cut in the bottom of the loading pockets in the old breaker and chutes were run to a common point to deliver to the loading belt conveyor. When this work was completed, the change from the old method of loading to the present one was made over a Sunday. This did away with the old loading track and permitted the completion of the addition without interruption.

In the meantime, as the addition was being finished, one elevator was installed and as soon as the new part was complete, by a temporary chute arrangement the coal was carried into the addition and prepared there, thus allowing the removal of all machinery in the old part except the rolls, dump bars and picking head. These rolls were set to pass nothing larger than broken, and by putting an extra broken deck on the shakers, in the addition, this broken was removed and cleaned by hand picking and run to a temporary loading pocket.

New rolls, tables, shakers and elevator were then placed in the old breaker and gradually put into service. The remodeling was finally completed without any serious loss in production due to erection delays.

During construction, much overtime and Sunday work were necessary to change and install the temporary chutes for connecting old work with new, which usually had to be torn out or replaced by permanent construction as the work proceeded. The greatest difficulty was found in supporting old machinery in the old structure, because of the corrosion of steel beams, which in many cases were held in place by old chutes, hoppers, etc. When these were removed, the steel member frequently fell out or came loose, adding to the danger. By safety-first methods at all times, the job was completed without serious accident of any kind.

American citizens should buy LIBERTY BONDS, because they are the bulwark of defense, keeping from the women and children of America the horrors which Germany visited upon the women and children of Belgium.

Hints on the Storage of Coal

Coal should be stored in small quantities as near to the point of consumption as possible, says a recent statement of the Bureau of Mines on the subject of stocking coal in piles. Small coal piles rarely ignite from spontaneous combustion. Coal should be stored near the point of use to avoid rehandling, extra transportation and the degradation of size which follows each rehandling. For these reasons the bureau would advocate storage, so far as possible, in the bins and yards of the ultimate consumer, thus dividing the risk of loss from spontaneous combustion. If large storage piles are necessary, certain general principles must be borne in mind. The generation of heat is the result of slow oxidation of the coal surface. The oxidation is much more rapid from freshly mined coal or from freshly broken surfaces. The oxidation rate increases rapidly with increased temperature. Different coals have different oxidizing rates. These facts lead to the following recommendations:

Where there is choice of coal to be stored, that having the lowest oxidizing rate should be chosen, if known.

Between two coals, that which is least friable, and therefore which presents the least total coal surface in the pile, should be selected.

The method of handling should be such as to produce the least freshly broken coal surface.

The coal should be as cool as possible when piled. Piling warm coal on a hot day is more likely to produce spontaneous combustion.

The coal must be kept from any extraneous source of heat.

Alternate wetting and drying of coal during piling is to be avoided if possible.

The fine coal, or slack, which furnishes the larger coal surface in the pile, is the part from which spontaneous combustion is to be expected. Piling of lump coal where possible is therefore desirable.

In the process of handling, if the lump coal can be stored and the fine coal removed and used immediately, the practice prevents spontaneous combustion in coals which would have otherwise given trouble.

The sulphur content of coal is believed by many to play an important rôle in spontaneous combustion. The evidence on this point is still conflicting, but to play safe it is desirable to choose coal having a lower sulphur content, when choice is possible.

There is a current belief that dissimilar coals stored in one pile are more liable to spontaneous combustion. The evidence on this point is also conflicting, but, to play safe, it is advisable to store only one kind of coal in a pile.

The ground on which a coal pile is built should be dry.

The foregoing recommendations are all derived from the factors affecting the heating of coal.

There should be no spontaneous combustion, whatever the heating rate, provided the heat is carried away as rapidly as produced. This fact brings about the following recommendations:

Coal piles should be so made that there is ready movement of air for ventilation throughout all parts of the coal pile. This is the condition when the entire pile is made of coarse lump coal. With ordinary coal piling this is difficult. Surfaces of coal piles should be exposed to allow the pile to cool; or else the coal should be so stored that air circulation within the pile is very small. When the air circulation is reduced to a minimum, as in an air-tight bin with no opening in the bottom, the oxygen of the air is soon removed and the mass of the coal lies in an inert atmosphere, except for small local circulation near the surface. Air-tight bins are usually impracticable, but the following practice is recommended to approximate these conditions.

In making a coal pile of mixed sizes, the coal should be so handled as to make a homogeneous pile and prevent the segregation of coarse and fine coal. This frequently determines the most desirable machinery for unloading coal.

It is common practice to limit the height of a coal pile, this for two reasons: A pile too high crushes the lower layers of coal, producing more fines; the larger the pile the less heat-dissipating surface there is exposed in proportion to the heat generating capacity of the pile. Twelve feet in height is a common limit.

Whatever precautions are taken in choice and handling of coal, provision should be made for keeping track of the temperature rise in a coal pile and for rapid rehandling of portions of a pile in case of excessive heating. In a coal pile covering a considerable area, it should be so subdivided that in case of spontaneous combustion of a portion, the heat will not be transmitted to the whole pile, thus accelerating the heating of portions of the pile which normally would have remained cool.

To keep track of the temperature of coal piles, it is recommended that $\frac{1}{2}$ -in. iron pipe be driven vertically into

the pile at distances of 15 or 20 ft. apart. A maximum thermometer lowered into the pipe to varying depths will indicate the temperature of the pile opposite the thermometer.

A survey of the pile and a survey of the temperature of all parts of the pile should be made twice a week during the first three months after the pile is made, and once a week thereafter until the pile has evidently ceased to heat. As soon as any portion of the pile reaches a temperature of 150 deg., provision should be made for removing that portion of the pile. Actual removal need not begin until the temperature has reached 180 deg., but at these temperatures the rate of oxidation is dangerously rapid. The object of rehandling the coal is to allow it to cool below a dangerous temperature. Any method of rehandling which does not allow of cooling will only transfer the difficulty from the old pile to the new one. It is usually useless to employ water in an attempt to cool a coal pile.

Lack of provision for rapid reloading, cooling and repiling of coal is the cause of serious loss from spontaneous combustion.

New England Coal Dealers' Association Meets

Retail Dealers Hold Best Meeting in Sixteen Years—Many Interesting Papers Read—James J. Storrow, the Principal Speaker of the Meeting, Pays High Tribute to Coal Dealers—Animated Discussion Followed Mr. Storrow's Remarks

THE annual meeting of the New England Coal Dealers' Association, which was held at Springfield, Mass., Mar. 20-21, was easily the best in the sixteen years that the New England retail coal dealers have been organized. The Auditorium, in which the sessions were held, has a seating capacity of 4000, but the coal men with a registration of nearly 500 made a respectable showing when Mayor Stacy extended them a cordial welcome. The first day was taken up with reports and other routine matters, having special regard, however, for dealers' local problems. William A. Clark, of Northampton, Mass., in his report as president of the Association, paid a high tribute to Harry A. Garfield for his painstaking effort to be fair with retailers and other human factors in the distribution of coal. When the United States Fuel Administrator was shown that mistakes had been made he quickly corrected them and was always in the position of one endeavoring to the utmost of his ability to deal with difficult problems. Mr. Clark showed that some of the mistakes had been made before Mr. Garfield went into office.

There was the usual dinner in the evening, 426 being in attendance, the largest thus far. R. C. Faulkner, of Poli's circuit, delighted the company with his rapid-fire talk, together with impersonations of President Wilson, and through the evening the entire gathering joined in singing. One of the popular songs was "Coal-less Days," written for the occasion by a Springfield coal man and set to the music of "School Days."

Thursday forenoon the meeting settled down to the business in hand. A resolution was adopted calling upon the Fuel Administration, both Federal and state, to insist that coal be marketed through retail dealers, except when destined strictly for manufacturing purposes. Speakers suggested that regular customers be

favorable, that dealers instruct their trade as to the value or otherwise of substitutes for coal, and that emphasis be placed upon conservation.

The election of officers was followed by short papers which were exceptionally good. George E. Copeland, of Worcester, urged serious consideration of the decrease of labor supply, a situation that will make more difficult any increase in production next winter. The obligation of a coal dealer to his community is to fight for coal. Yet the coal business has been the football of misinformation during the past winter. The reserve storage should be in the cellars of consumers first, and then in community storage piles as suggested in the press, but not in the community piles first. Mr. Copeland's paper was warmly received.

C. R. Elder, of Amherst, Mass., spoke on "Having Backbone in the Coal Trade," with special reference to retail prices. Frank A. Whiting, of Holyoke, Mass., asked the dealers for a better application of the Golden Rule as between dealer and customer, but, said he, it should be applied to regular customers first and then to others if possible.

F. H. Johnson, of New Britain, Conn., accounted in general terms for the shortage and then added that the coal dealers, as a whole, appreciated Mr. Garfield's selection of advisers from among men familiar with the industry and that he would continue to have their loyal support.

Maurice F. Reidy, of the Worcester Fuel Committee, advised that all connected with the coal business, whether dealers or administrators, profit by the experi-

Bondholders, don't shout until you are out of the war woods. The danger is still here. Buy bonds until the war is over.

ence of the past season. He told in detail of the careful plans of his Fuel Committee to work in close harmony with local retailers. Only in that way could unfortunate complications be avoided.

The important feature came on Thursday afternoon, when James J. Storrow addressed the meeting, giving a summary of his work and plans as Federal Fuel Administrator for New England. Mr. Storrow was enthusiastically cheered and could not have left the meeting without feeling that the retailers appreciate and approve not only his labors of the past year but his strong efforts at Washington and elsewhere this season in the interest of more coal for New England. Mr. Storrow's remarks were followed with the closest attention, and there were repeated bursts of applause as he outlined the difficulties of the present situation.

"Where does the Government intend to stop?" Mr. Storrow asked in emphasizing the commandeering of ships. "We have lost so many ships that at the present time New England is menaced with a shortage of steam coal which will be much worse than last winter. The limit of our steam coal this year will be the limit of the carrying capacity of our ships. This is plain talk, but it is the plain truth, and the people of New England are entitled to know it."

In his address Mr. Storrow paid a high tribute to the coal dealers for their loyal help in the acute period just passed. "The people do not yet realize," he continued, "how narrow was the margin last winter. Remember that during the entire months of January and February there was at all times more coal on cars at our four New England gateways, waiting to be pulled in to us, than our New England railroads could haul. By constant intercession with the coal companies we kept this coal in ample supply at the gateways, but New England railways could not pull it in as fast as we needed it."

Mr. Storrow rather took the breath away from many of the anthracite men present when he referred to deliveries by July 1 to consumers up to two-thirds of their yearly consumption, but aside from that there was marked approval. At the close of his formal address Mr. Storrow invited questions and further showed his hold upon the members by the way they greeted his prompt answers. Thomas W. Russell, Connecticut Fuel Administrator, also participated in the discussion. The impression made was strong, particularly when Mr. Storrow emphasized his belief that distribution should follow just as far as possible the normal channels, the useful services of dealers and "jobbers" alike included, and stated frankly his opinion that municipal coal yards would not be likely to improve upon the methods employed by retail dealers with their experience and their desire to give the public necessary service.

In the basement of the Auditorium was an exhibit of mechanical contrivances for the use of coal dealers. The visitors were especially interested in conveyors and wagon loaders, although a kerosene air-type thawing outfit attracted a good deal of attention. There never was a season when it was so hard to unload cars. Next year the association will meet in Worcester.

Purchasing a LIBERTY BOND will mean helping insure these United States against depredatory powers for ages to come.

Utah Leads in Production per Man

The United States Geological Survey has just published a table showing the coal produced per man employed in 1916. To it we have added columns II, IV and VI showing the order in which the states stand in days worked, in average tonnage per year and in average tonnage per day per man employed.

Utah leads in daily and annual tonnage per man, though it is only thirteenth in its regularity of work. Texas is last in both daily and yearly tonnage per man, though it is next below Utah in its regularity of work. Utah has thick coal, whereas the Texas coal

COAL PRODUCED PER MAN EMPLOYED, 1916

State	Days Worked		Average Tonnage		Per Day	
	Order	Number of Days	Order	Tons Per Year	Order	Tons
Alabama	(3)	262	(15)	715	(19)	2.73
Arkansas	(24)	184	(20)	528	(16)	2.87
Colorado	(12)	233	(13)	800	(12)	3.43
Illinois	(21)	198	(8)	876	(4)	4.42
Indiana	(23)	187	(11)	838	(3)	4.48
Iowa	(20)	202	(21)	503	(21)	2.49
Kansas	(19)	204	(18)	567	(18)	2.78
Kentucky	(17)	208	(12)	813	(8)	3.91
Maryland	(5)	256	(14)	792	(13)	3.09
Michigan	(16)	216	(23)	466	(24)	2.16
Missouri	(18)	202	(22)	491	(22)	2.37
Montana	(8)	244	(6)	961	(7)	3.93
New Mexico	(1)	292	(10)	839	(15)	2.87
North Dakota	(9)	244	(7)	889	(11)	3.64
Ohio	(22)	197	(9)	839	(6)	4.26
Oklahoma	(25)	178	(24)	463	(20)	2.60
Pennsylvania						
Bituminous	(4)	253	(4)	548	(23)	2.17
Anthracite	(6)	259	(19)	1,012	(9)	3.91
Tennessee	(10)	239	(16)	666	(17)	2.79
Texas	(14)	218	(25)	444	(25)	2.04
Utah	(13)	228	(1)	1,140	(1)	5.00
Virginia	(2)	272	(5)	793	(10)	3.65
Washington	(15)	217	(17)	633	(14)	2.92
West Virginia	(11)	237	(2)	1,108	(2)	4.68
Wyoming	(7)	248	(3)	1,090	(5)	4.40

is quite thin. Utah is a state with progressive ideas in mining; Texas is somewhat backward. It is interesting to note that West Virginia stands so high both in the yearly and daily production per man. Indiana and Illinois come next in the average daily production.

New Mexico led in regularity of work. To do this it works practically every day except Sundays and holidays. Oklahoma has the lowest running record of all the states—only 178 days per year.

The reader will also note that the production per man even in Texas averages 2.04 tons, which would look a big tonnage at the best of mines in Europe, where, however, there is more conservation and where, moreover, the mining conditions are usually none too favorable.

Germany's Fuel Predominance

In 1916, before Germany assisted in the preservation of order in Russia by coolly annexing large parts of its territory, O. Simmersbach wrote in *Stahl und Eisen* that Germany's reserves represented 54 per cent. of the whole available coal supply in Europe whereas Great Britain and Ireland's supply represented only 24.17 per cent. In this estimate, the coal stolen from Belgium and France by unjustifiable invasion was not included. As the British coal is being worked at a rate 45 per cent. greater than the coal of Germany, Great Britain is justified in having some apprehension when she notes that a country which has always regarded her resources as material of war will soon outstrip her as a producer of minerals. Fifty per cent. of the German coal in Westphalia and more than 40 per cent. in Upper Silesia.

Storage Battery Locomotive from Manufacturer's Standpoint

BY R. L. HEBERLING

NEW YORK, N. Y.

Mine locomotive service presents an entirely different problem to the storage battery manufacturer than any other form of service. I do not know of any service where storage batteries are used, where abuse need not be figured on, regardless of the opinion of manufacturers and operators of apparatus using such batteries. This abuse should be expected and provided for by the battery manufacturer or it is evident that success will not be met.

Before beginning the manufacture of locomotive batteries, the Philadelphia Storage Battery Co. detailed me to investigate the service and observe the operation of locomotives equipped with various types of batteries. The first thing noticed was the need for extremely high capacity and a policy was immediately put into effect under which no batteries could be installed unless they had sufficient capacity to finish a hard day's work with 20 per cent. reserve. This was accomplished by standardizing on a high capacity type of storage battery and insisting upon its occupying all of the space that was available.

In supplying a battery with more than enough capacity to do a hard day's work, the worst abuse, that of over-discharge, was automatically eliminated. Breakage of rubber jars was eliminated by furnishing extremely heavy jars of extra high-grade compound, assembled in heavy trays, and fitted with special molded covers to absolutely prevent sloppage of acid. These covers are designed so it is easy to fill the battery with water without overfilling. While it is only necessary to fill a battery of this type about once every week or ten days, overfilling, even slightly, causes rotting of the

trays, with consequent breakage of jars and connectors, if the acid can splash out.

In addition to designing a battery which would have all of the features described above, it was thought necessary to assemble the battery in such a way that it would be easy to keep clean. This was done and it is only necessary to turn the hose on the battery, or flush the tops of the trays with water, in order to clean them.

The matter of installation and service was the next problem. This work was placed directly in the hands of competent sales engineers who were responsible for not only service, but sales as well. There are so many places where storage-battery locomotives can be used to advantage that it certainly does not pay to recommend their use for any sort of service for which they are not adapted.

It was felt that it was necessary, to some extent, for the storage-battery manufacturer to assume the responsibility for installing the proper battery equipment, as they are, or should be, in better position than the operator to know what equipment will do the work properly.

A \$100 LIBERTY BOND will clothe a soldier or feed a soldier for eight months, or purchase 5 rifles or 30 rifle grenades, or 43 hand grenades, or 25 lb. of ether, or 145 hot-water bags, or 2000 surgical needles. A \$100 and a \$50 bond will clothe and equip an infantry soldier for service overseas, or feed a soldier for a year. Two \$100 bonds will purchase a horse or mule for cavalry, artillery or other service. Three \$100 bonds will clothe a soldier and feed him for one year in France, or buy a motorcycle for a machine-gun company. Four \$100 bonds will buy an X-ray outfit. One \$500 bond will supply bicycles for the headquarters company of an infantry regiment.

The Opportunity

BY BERTON BRALEY

NOW is the time to prove
The worth that is in you.
Now is the time to move
With spirit and sinew,
Body and heart and soul
In your occupation,
Making of trade in coal
But a consecration.

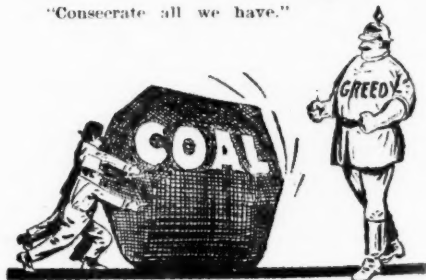
Aye, let us consecrate
To the Nation's service
All that we have. No fate
From our task shall swerve us.
Not for the sake of pelf
Shall we plan and labor,
Each shall forget himself
As he aids his neighbor.

THIS is a war with Greed
And we fight to win it.
Coal is the nation's need
Every hour and minute,
Coal for the ships that steam
On their daring missions,
Coal to keep up the stream
Of the war's munitions.

Let us not fret or muse
On the wealth bereft us;
For, if this war we lose,
There will naught be left us;
So let us do our share
Of the work that's given—
Fighting for all things fair
In the world we live in.



"Consecrate all we have."



"This is the war with greed."

How Some Companies Pushed the Sale of Liberty Bonds

AS WE go about our daily tasks in peace and safety men are dying every minute on the battlefields of Europe to save civilization. Our own gallant soldiers are shedding their blood in France and our sailors engulfed in the waters of the Atlantic as they go in defense of America's rights and honor.

Upon our performance of the work committed to us depend the lives of thousands of men and women, the fate of many nations, the preservation of civilization and humanity itself; and the more efficient and prompt we people of America are in doing our part, the more quickly will this war come to an end and the greater the number of our soldiers and sailors who will be saved from death and suffering and the greater number of the people of other nations released from bondage and saved from death.

To work, to save, to economize, to give financial support to the Government is a duty of the Nation and to the world and it is especially a duty to our fighting men who on land and sea are offering their lives for their country and their countrymen to further this duty. We reproduce below extracts from letters received from a number of concerns in answer to the question of what plans were followed in the drive on the Second Liberty Loan. The workingmen of America have a tremendous interest to serve, a vital cause to defend, a work of surpassing importance to accomplish. What is vital to them is vital to America and to the world. How they will see their duty and how the great mass of them will perform it depends in large measure on what you—the employer—does to drive home the fact that this Third Liberty Loan must be oversubscribed.

Found Personal Solicitation Necessary

Personal solicitation by each foreman in his own department followed and our experience is that it is the one great factor which sells Bonds. We have found that no matter how much advertising we do, the personal solicitation is necessary.

Daily Charts Showed How Different Departments Were Responding—Thus Arousing Competition

The loan was brought to the attention of the employees by a poster on the bulletin boards and principally by personal solicitation. The signatures were secured on application blanks printed by our company and each man was solicited by a member of the general committee. The biggest advertising that the Loan got was through daily charts posted up showing the various standings of the different plants. The subscriptions were taken in person.

This Firm Promised To Redeem Bonds at Par Any Time Employees Desired

Each employee was solicited personally, and where we could secure subscriptions, we arranged that they could pay cash, which some of them did, and we arranged a great many of them for weekly payments. We helped the matter along as far as we possibly could by agreeing to take the loans off their hands at any time they were dissatisfied and to return their money to them at par. . . . Practically all of our men receiving good wages, they each subscribed for one or more of the bonds.

Permitted Employees To Pay Weekly

We assembled the employees of the company in one large room and had our Works Manager give them a short talk explaining in a few words what should be done. After that the members of the Loan Committee made their

address and immediately started to take subscriptions themselves. These subscriptions were later turned over to us and we purchased the bonds outright in the company's name allowing the employees to pay for them weekly on the basis of \$1 for each \$50 of the loan subscribed.

Posters and Shop Talks Brought Response from 60 Per Cent. of Force

Large posters were distributed in all parts of the shop and short talks were given to the men at various times by Liberty Loan Committee of this city. The foremen were interviewed personally by the writer, and urged to talk to the men to buy bonds with result that about 60 per cent. of our force made subscriptions.

Eighty Per Cent. of This Firm's Employees Were Germans—the Way They Subscribed Was a Surprise to All

The writer personally used every influence with the men to get them to subscribe. We had a rather peculiar situation here as probably 80 per cent. of our men are Germans, or of German descent. We were very agreeably surprised at the results. Some of our men bought bonds outright and also subscribed on the installment plan. Most of the men subscribed at the rate of one or two dollars a week.

Called Each Employee Into Office and Spoke the Matter Over

We called each employee into the office, talked the matter over with him, advised the savings features connected with the same as well as the patriotic side of the loan and we agreed to buy the bonds for them, taking from their weekly wages what they felt they could afford to pay. We to carry the bonds for them until payment is made complete, when the bond would be turned over. We also gave them to

understand that if anything happened to them whereby they could not meet their payments we would gladly take the bonds off their hands.

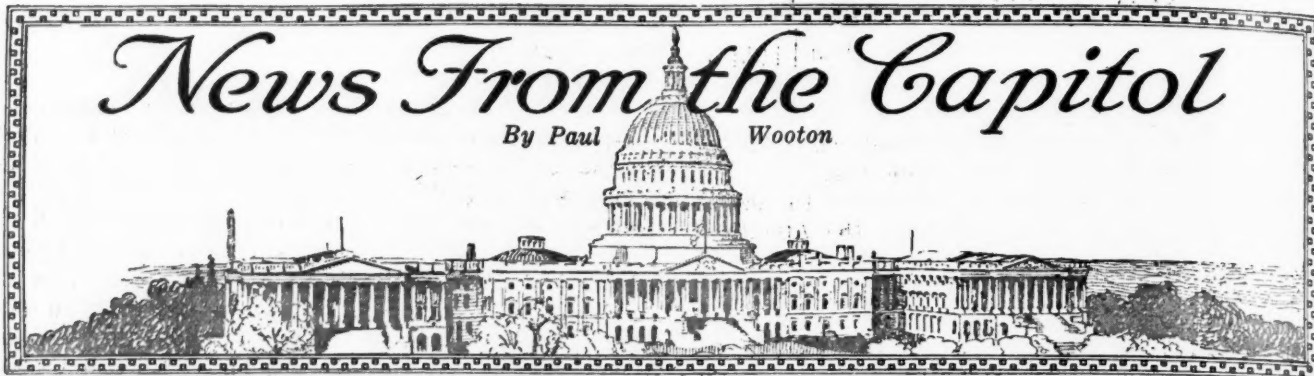
Push the sale of LIBERTY BONDS. If this issue is not oversubscribed, this country would deserve to get everything the Kaiser chose to hand it. Back our boys' bayonets with bonds.

This Plan Brought 300 Per Cent. More Subscriptions Than Were Received for the First Loan

About one week previous to the day on which the Liberty Loan salesmen from the Local Board of Commerce were to go through our plant, we distributed folders which we ourselves prepared, explaining in detail just what the bonds were for, their various denominations, the reason why all should buy, and in fact gave a full explanation of such a nature that the man in the shop would understand all about the Loan, and this in a way prepared his mind before the day of the drive arrived. We, of course, had the plant placarded with attractive posters and the whole atmosphere throughout our organization, before the week mentioned, was thoroughly Liberty Loan. On the day appointed, we had a great meeting which every employee attended. We had a number of speakers, provided by the Board of Commerce, some speaking in English and others in Polish. Immediately after the general meeting, which was at noon, we had a meeting of all of the foremen and department heads and went over the proposition with them. We then had the Liberty Bond salesmen go through the various departments with the foremen of those departments and secure the applications. The result was that we secured 300 per cent. more subscriptions than for the first loan, which, while handled systematically, was not taken care of as thoroughly as the second one.

News From the Capitol

By Paul Wooton



Asks Sixty-Day Extension on Contracts for Railroad Fuel

As the railroad fuel situation has not been threshed out as yet, railroad officials are asking coal operators to extend existing contracts for a temporary period not to exceed 60 days. A. H. Smith, the regional director of railroads in the East, has sent the following letter to the president of each railroad under his jurisdiction: "The matter of renewal of railroad fuel contracts is now under consideration. Pending determination in regard thereto, you are authorized to arrange with mines at present supplying your company with fuel coal to continue supply on basis of existing contracts expiring Apr. 1, for temporary period not to exceed 60 days. If this cannot be done, please advise, with your recommendation as to meeting temporary needs."

Weekly Production Statistics

Coal specialists in Washington are at a loss to explain a decrease of more than half a million tons in the coal production during the week ended Mar. 16. Production for that week is estimated by the Geological Survey at 10,686 tons. Beehive coke production increased. The week's output was 644,000 tons. A slight increase also was registered at the byproduct ovens. The amount of coke produced there was 461,846 tons. Anthracite shipments continue to increase. The week's record was 42,265 cars.

Senator Jones Answers Critics of Fuel Administration

In answer to Senator Lodge's recent arraignment of the Fuel Administration, Senator Jones, of New Mexico, reviewed the coal situation which existed when Dr. H. A. Garfield was appointed to the position of Fuel Administrator, in a speech delivered in the United States Senate.

Indicating that Dr. Garfield was an experienced business man, and that he possessed an intimate knowledge of the coal-mining industry through connection with a large corporation which developed a number of coal mines in the Piney Fork district of Ohio, the Senator went on to show that the order closing down industry was not the "reckless" ruling some consider it.

"What was it worth to bring to full capacity the manufacture of steel plates, projectile steel and war munitions?" asked Senator Jones. "What was it worth

to bring to the shipyards ample supplies for the building of ships? What was it worth to increase the output of clothing for the armies in France and the armies assembled in the cantonments? What was it worth to say to the soldiers in France the first consideration at home is their welfare and their support? What was it worth to the mothers of our country to say to them that their boys, who are making the supreme sacrifice, shall be sustained? What was it worth to bring to the business interests of this country a keen realization of the actualities of war? What was it worth to say to France, Italy, Serbia, Belgium and England that their sacrifices for the preservation of world civilization shall not be in vain? What was it worth to say to them that when we pledged the whole of our resources to the conduct of the war that we meant what we said? What was it worth to say to Imperial Germany that the whole of America is willing to stand at attention, cease ordinary industry, and in patriotic fervor watch the increasing glow of furnaces, listen to the ceaseless movement of trains, watch the departure of ships, all for the purpose of sustaining this war and convincing the imperialistic autocracy that civilization shall not be crushed and that democracy shall endure? A balance sheet showing only debits and credits in dollars is incomplete. There are some things which cannot be valued in dollars."

May Insert Clause To Cancel Existing Contracts If Price Is Changed

A ruling of the United States Fuel Administration relative to the interpretation of certain provisions of Publication No. 16, entitled "Order of the United States Fuel Administrator Regulating the Making of Contracts by Operators, Producers and Jobbers of Coal and Coke," makes it possible for either party to a contract to provide for its cancellation in the event that prices are raised or lowered. The ruling is as follows:

Paragraphs 2 and 3 of the "Order of the United States Fuel Administrator regulating the making of contracts by operators, producers and jobbers of coal and coke," dated Dec. 24, 1917, and effective Dec. 29, 1917, do not restrict or otherwise affect the right of the parties to any contract of the kind mentioned in either of said paragraphs to include in such contract a provision reserving to the operator or producer the power to terminate the same in the event of a reduction in the Government price after the execution of the contract, or such a provision reserving to the consumer or purchaser named in such contract a power to terminate the same in the event of an increase in the Government price after the execution of the same.

New Coal Prices Announced

New coal prices, effective Mar. 23, were announced by the Fuel Administration last week as follows:

Ohio and West Virginia—No. 8, or Pittsburgh seam, including Hancock, Brook, Ohio, and Marshall Counties, West Virginia, and Jefferson, Harrison, Belmont, Carroll and Monroe Counties, Ohio: Run-of-mine, \$2; prepared sizes, \$2.25; slack or screenings, \$1.75.

Pennsylvania—Pittsburgh field, including the Counties of Washington, Green, Fayette, Westmoreland and Allegheny, except (1) that portion of Allegheny County from the lower end of Tarentum Borough north of the county line; (2) the territory in Westmoreland County from a point opposite the lower end of Tarentum Borough north along the Allegheny River to the Kiskiminitas River and along that river eastward to the Conemaugh River to the county line of Cambria County; (3) operations on Indian Creek in Westmoreland County; (4) operations in the Ohiopyle district of Fayette County: Run-of-mine, \$2; prepared sizes, \$2.25; slack or screenings, \$1.75.

Illinois—**District No. 1**—Including Mercer, Bureau, Kanakee, LaSalle, Grundy, Will, Putnam, Marshall, Livingston, Woodford and McLean Counties: Run-of-mine, \$2.65; prepared sizes, \$2.90; slack or screenings, \$2.40.

District No. 2—Including Rock Island, Henry, Warren, Knox, Stark, Peoria, Hancock, McDonough, Henderson, Fulton, Tazewell and Schuyler: Run-of-mine, \$2.40; prepared sizes, \$2.60; slack or screenings, \$2.10.

District No. 3—Including Menard, Logan, Dewitt, Champagne, Vermillion, Sangamon, Macon, Pratt, Christian, Moultrie, Shelby, Green, Macoupin and Montgomery Counties, and Madison County north of the latitude of Alton, also all mines included in other rulings: Run-of-mine, \$2; prepared sizes, \$2.20; slack or screenings, \$1.70.

District No. 4—Including Bond, St. Clair, Monroe and Randolph Counties, and Madison County south of the latitude of Alton and Clinton, Washington and Perry Counties, not including mines along the line of the Illinois Central between Vandalia and Carbondale: Run-of-mine, \$2; prepared sizes, \$2.20; slack or screenings, \$1.70.

District No. 5—Including Jackson County, not including mines on the Illinois Central between Carbondale and Duquoin: Run-of-mine, \$2.40; prepared sizes, \$2.60; slack or screenings, \$2.10.

District No. 6—Including Marion, Jefferson, Franklin, Williamson, Johnson, Hamilton, Saline, White, Gallatin and mines along the main line of the Illinois Central between Vandalia and Carbondale in Clinton, Washington, Perry and Jackson Counties: Run-of-mine, \$2; prepared sizes, \$2.20; slack or screenings, \$1.70.

Virginia and West Virginia—**Pocahontas District**—Operations on the Norfolk and branches west of Graham, Va., to Welch, including Newhall, Berwind Crane Brake, Hartwell and Beechwood branches, also operations on the Virginian R.R. and branches west of Rock to Herndon: Run-of-mine, \$2; prepared sizes, \$2.25; slack or screenings, \$1.75.

You buy LIBERTY BONDS because they help to arm, outfit and feed the soldiers and sailors who are fighting Democracy's battle under your flag.

District Representative Appointed for Illinois and Indiana

F. C. Honnold, secretary of the Franklin County Coal Operators' Association, has been named district representative of the Fuel Administration for Illinois and Indiana. His headquarters will be in Chicago. C. G. Hall, of Terre Haute, will be deputy district representative from Indiana. In Illinois, the following assistant representatives have been appointed: O. G. Scott, Springfield; P. H. Greenlaw, St. Louis; J. A. Fenelon, Galesburg; T. R. Carty, J. L. Keirlin and Charles O. Os-

trom, Chicago. In Indiana assistant district representatives were named as follows: Jonas Waffles, Terre Haute; C. G. Fletcher, Indianapolis; H. W. Little, Evansville, and Eugene Wardlaw, Brazil.

Arthur Fancher, of Bay City, has been appointed district representative from Michigan.

"When innocent blood from the four corners of the world cries out for justice," what will your answer be? Speak through the THIRD LIBERTY LOAN.

Reduction in Hard Coal Shipments to West and Northwest

A reduction in anthracite shipments to the West and Northwest has been announced by the Fuel Administration in connection with an order placing the supervision of anthracite distribution in the hands of J. B. Dickson, S. B. Warriner and W. J. Richards. They will act as district representatives in Pennsylvania under the general direction of J. D. A. Morrow. The coal year beginning Apr. 1, 1916, will be used as the basis for distributing after Apr. 1.

Do It Now!

THERE'S not much time left before April 13—the date on which the Annual Success Number of Coal Age makes its appearance. We have already received a number of splendid articles for this issue, which promises to be much superior to any Success Number we have published in the past. If you are working on a success story, or are still thinking of writing one, don't delay. Get to it immediately and mail it this week, with the necessary photographs or diagrams.

Brief Washington Notes

Jobbers who have made application for licenses prior to Apr. 1, but who have not received their licenses on that date, will be allowed to continue business as usual.

A survey of the production and consumption of all paper and pulp products is being made by the Federal Trade Commission at the request of the Fuel Administration. Pending the outcome of this investigation, the restriction in the use of fuel by the manufacturers of box board has been suspended.

In order to relieve operators from unnecessary work in their accounting departments, the Federal Trade Commission has decided that hereafter those petitioning a revision of mining prices may furnish sworn cost sheets showing combined operating results from Apr. 1 to Aug. 1, 1917, and month by month from Aug. 1 to date of application.

Canada will continue to be granted the same treatment in coal matters as is accorded a state of the United States. Permits are being issued to a large number of operators allowing exports to the Dominion. The matter is being handled in a way which will prevent any abnormal flow of coal into Canada.

THE LABOR SITUATION

EDITED BY R. DAWSON HALL

General Labor Review

The "Every man for himself" movement that has ruined Russia is lifting its evil head in America. It desires now to break up the United Mine Workers of America. Some of the union men are already preaching "self determination." They do not like higher dues; they do not approve of affiliation with the bituminous mine workers; they want to determine for themselves what their action shall be. They are disruptionists in every union, the union with the small "u"—the United Mine Workers of America—and the union with the big "U"—the United States of America.

Now it is local 1594 at Trescow that has decided on self-determination. This little body of men in the Hazleton region of Pennsylvania has voted to each individual in the union the funds that are in the local treasury, and the union is disbanded. The union men have been instructed that they must restore those funds as the personal use of local funds is unconstitutional.

THIRTY-SEVEN LOCALS REPUDIATE THE UNION

At least 37 local unions in the anthracite region have voted against the payment of the 50 per cent. increase in monthly dues. In consequence the leaders of the movement against the increase have determined to send out circular letters into districts Nos. 1 and 7 to ascertain the sentiment in favor of a separate organization of anthracite mine workers.

What makes the difficulty more delicate to cope with is the fact that the mine workers are bitterly opposed to the 86 international organizers who have been brought in to preserve the union. The miners resent this incursion of "white-collared" men drawing \$6 to \$7 a day and expenses.

While the men in the anthracite region are trying to throw off their allegiance to the union because the union is too large and membership in it involves helping in some movements in which the mine workers of the anthracite region are only indirectly interested, the mine workers in the Sydney field of Nova Scotia are preparing to enter the union to secure protection against the introduction of Chinese labor.

AMALGAMATED MINE WORKERS SEEK ADMISSION

The mine workers of Nova Scotia were unionized in a local organization known as the Amalgamated Mine Workers of Nova Scotia, formerly known as the Provincial Workman's Association. There are about 10,000 men in the Nova Scotia mines, and it is said that in some of the largest locals the vote for amalgamation with the larger organization reached 100 per cent. and where the opposition was strongest 94 per cent. voted for union. The vote as a whole is said to have stood at 98 per cent. for affiliation with the United Mine Workers of America.

Several years ago some Nova Scotia mine workers broke away from the Provincial Workman's Association and joined the United Mine Workers. A bitter strike, which then took place, was not participated in by the P. W. A's. The U. M. W. of A. spent about a million dollars trying to win the strike, but, not being in control of all the mine workers, that organization failed in its effort and so lost its whole standing in eastern Canada.

National feeling had something to do with the matter, but that feeling has largely died since the United States entered the war. When Neil J. Ferry of Hazleton, Penn., and Andrew Steele, of Novinger, Mo., both of the International Executive Board, advocated union they found the Nova Scotians ready to accept it, and it is likely that the Inverness and Pictou fields, also in Nova Scotia, will add their mine workers to the others, in which event the United

Mine Workers will receive into union some 4,000 more men. The mine workers had reason to believe that Chinese would be brought in, announcements by both Fuel Controller Magrath and Mark Workman, president of the Dominion Iron and Steel Co., of which the Dominion Coal Co. is a branch, having been in advocacy of this unpopular course.

And now as to strikes; when will we be through with the record of them? In the anthracite region the Reliance mine of the Philadelphia & Reading Coal and Iron Co. which struck on Mar. 8, because the company refused to put on an extra fireman per shift, and later returned to work, struck again on Mar. 18.

STRIKE AGAINST FUEL ADMINISTRATION ORDER

On Monday, Mar. 18, there were several strikes in the Kanawha district of West Virginia against an order of the Fuel Administration dated Feb. 19. This order required some of the mines in the district to begin work at 1:30 in the afternoon pending repairs to the plant of the Virginian Power Co.

The mine workers in 11 mines on Cabin Creek were the first to refuse to go to work. The men demanded that the whistle blow at 7 a.m. The next day the mine workers employed in the plant of the Kanawha & Hocking Coal and Coke Co. refused to go to work for the same reason. On Wednesday five mines of the Kelly's Creek Colliery Co. followed suit. The Federal Fuel Administrator was promptly apprised of the situation and sent a special investigator into the field. The strike ended on Friday, Mar. 22.

In Illinois, 200 miners have struck against the United States railroad administration. The miners were employed by the United States Fuel Co., at Bunsenville, Ill., to the southwest of Danville. A change in the time table of the only railroad running through the mining village closed out the miners' way of reaching the mine and in consequence they went on strike. There are plenty of houses at Bunsenville but the mine workers prefer to live in Danville and to go to and from their work on the railroad.

DR. GARFIELD PROVES HIS POINT ABUNDANTLY

The situation in central Pennsylvania is interesting and perplexing. The Fuel Administration after careful investigation concluded that the price of coal should be raised 60c. a ton so as to make it possible for all the operable mines to continue their production. The mine workers without any investigation came to the conclusion that they were entitled to that increase and demanded it. Fortunately the district officials, who form the policy committee, have been willing to submit the matter to the Fuel Administrator before a vote in conference is taken as to the advisability of a strike. An agreement will in all probability be reached.

Central Pennsylvania is most important in itself, but the matter is broader by far than central Pennsylvania. Dr. Garfield had to decide on prices for coal immediately after his appointment, and he did so without any really adequate investigation. No one, certainly not Dr. Garfield himself, would deny that the prices as set were not based on the ascertained costs of production. They were in some cases set quite low. The result was not disastrous, because all the companies were selling most of their coal on long-term contracts. With these Dr. Garfield did not interfere.

Since that time Dr. Garfield has been getting real costs of production. In some cases he has found that injustices have been done or rather would have been done had Government prices alone been procurable. He is rectifying prices where these injustices occur, but certain mine

workers do not recognize the justification for these corrections. They say a patriotic man would stand for a slight loss, but where are the miners who are willing to dig coal and pay for the privilege of digging it?

On Mar. 10 the British Government announced that on Mar. 21 it would proceed to the enlistment of 50,000 miners. The miners actually thought that it should not be done. They thought that the miners who have given less than their proportion should be exempted, not because miners were more needed than soldiers, but because the miners declared themselves self determining and so free from conscription. Lloyd George, the Premier, put the matter in his happy way on Mar. 22:

"I am utterly at a loss to know where the men are to be found if first the engineers and then the miners say we will not find the men. Other trades will quickly take the same course. That would mean anarchy, not government.

"I have just had news that the Germans have attacked us on a front of nearly sixty miles with overwhelming forces. I am amazed that it should be considered debatable whether the miners and engineers are going to make their contribution to the defense of the country.

"If the sanction of the community is going to decide whether a law should be obeyed, then, believe me, you will have a condition of things where the people who will suffer most will not be the people at the top, who are generally able to take care of themselves, but the poor devils at the bottom. It has always been so in the history of the world.

"It is better to talk plainly, and I am speaking with a great deal of feeling because I have just heard of this overwhelming attack brought about by the failure of the Russian democracy to have its orders obeyed. If the attack succeeds, the Germans might be at Calais, and the only answer we can give is a vote of the Miners' Confederation saying that they are not prepared to fight. You cannot give that answer."

The outcome, as might have been expected, was that the executive board of the federation adopted a resolution advising the men not to resist the combing-out process.

Our boys in France are as anxious as the Germans to know whether you have bought your THIRD LIBERTY LOAN. Which will you disappoint?

Central Pennsylvanians To Be Patriots

Let no one believe that the central Pennsylvanians are going on strike for more wages just when the nation needs all the coal it can get and the administration is regulating the price at which coal shall be sold. The Pennsylvania mine workers are inquiring as to the right course to follow and are getting duly informed, and so long as they do that they are not likely to go far wrong.

Before they called a convention of delegates to find whether a strike should be called as a protest against the operators' refusal to pay more wages, the policy committee held a meeting at Clearfield, Penn., and there decided to have a conference with the Federal Fuel Administration. The subcommittee chosen for that conference consisted of President John Brophy, Vice President Charles O'Neill, Secretary-treasurer Richard Gilbert, Frank Waite and Edward Swartzenstruver. To these the National Board Member William Donaldson was added.

The subcommittee met Dr. Garfield on Tuesday, Mar. 26, and he made a convincing argument for peace and order. He said that there must be no strikes anywhere and that the terms of the Washington Agreement must everywhere be complied with. All adjustments of price, upward and downward, were based on the wage under the Washington Agreement. If the increases in central Pennsylvania were a cause for increased wages, then the decreases in Colorado might equally be shown a reason for decreased wages. The Fuel Administrator demonstrated by charts and figures that the price now provided allows only a fair profit.

A LIBERTY BOND gives you a look into the future, but defeat in the war will keep you tied to an unfortunate past.

Labor Quits Mines Believed Unsafe

Unsafe mines are becoming a factor in the labor situation in Illinois. It is said that the high pressure under which the mines have been operated during the past winter has led to laxness in the matter of safety precautions, and as a result there have been several explosions, in which a number of lives have been lost. Reports that certain mines are unsafe have made the miners uneasy and there is a good deal of talk about quitting the mines for the farms.

The state employment agency at Springfield has received a number of communications from miners inquiring about farm work. It has been found that these come from employees of mines about the safety of which there is some doubt. How much of truth and how much of false rumor there is in the reports of the condition of the mines is not known. The reports are substantiated in a measure by the fact that there have been a number of disasters. Advantage may have been taken of this fact to spread unfounded reports. It is probable that the situation will lead to a more rigid inspection and that steps will be taken to compel operators to make their mines safe wherever their safety is questioned. Complaints were filed a few days ago against a mine at Virden, and it was ordered closed until certain safety precautions had been taken.

It is better to wear a LIBERTY BOND button on your coat than the print of the Kaiser's heel on your neck.

Miners' Attitude to Legislative Problems

The coal miners of Illinois were urged by State President Frank Farrington, in his biennial report, to lay aside commonplace aims and give the fullest measure of service in the war to crush autocracy. "Our immediate and fundamental problem," he says, "is to win the war. Commonplaces must be laid aside for the time and we must so design our action as to enable us to give the fullest measure of service and devotion to this all-absorbing issue. When the war is over we shall take up the commonplace, strengthened and helped by our devotion to duty, and fight on and on to the end that industrial justice shall prevail."

The report shows that during the year ending June 30, 1917, 207 men, or one out of every 391 men employed, were killed. This was one death for every 381,563 tons of coal mined. The number injured was 1634, or one for every 50 in the state. Each miner hurt represented 48,338 tons.

The legislation to be sought in 1919 is outlined as follows:

1. Further improvements in the workmen's compensation act, and especially one providing a penalty for employers who delay the payment of compensation claims.
2. The elision from the act of the waiting period of one week in compensation cases where the disability extends over a period of weeks.
3. Providing some form of guarantee behind the compensation awards so that when they are made one may be assured of their payment.
4. An old-age pension law.
5. Improvements in the mining laws, looking particularly to the prevention of gas and dust explosions in the mines.

The campaign for the THIRD LIBERTY LOAN is a spring drive in which every American is summoned over the top. And let us all be shock troops. If we purpose to make the attack we must be prepared to make the sacrifices.

Missouri's Midsummer Idleness Starts

The Missouri Coal War Board, consisting of members of the United Mine Workers of America and representatives of the Southwestern State Coal Operators Association, District 25, met in Kansas City Mar. 18 and issued a statement as to the reasons for the suspension of work in several Missouri mines. This coal war board is an excursion in coöperation into which the operators and miners in Missouri have entered. It has received and considered the important complaints of the miners and solved many of them and it has done so without resort to the usual courses of arbitration and strikes.

When, several weeks ago, warm weather came and the demand from the railroads slackened, domestic consumers ceased to buy for their winter needs and did not purchase fuel for fall and next winter because of the hint that the fuel administration might set lower prices. The miners in the field soon noted that operations in the mines were slowing down. The miners who were laid off did not understand why this should take place, and miners in other sections were wondering whether their mine would not be next. Newspaper publicity on coal mining has given the impression to everybody that the mines must be kept working all the time to supply the fuel necessary, and to prepare for the 62,000,000 excess tons that must be mined in 1918.

Many miners seem to have an impression that the coal operators have something up their sleeves. In Missouri the miners did as they have been doing all winter, they took these doubts and suspicions to their local efficiency committee which immediately took them up with the Missouri Coal War Board. The statement of the Coal War Board is being transmitted to the coal operators and to the miners and is having the effect of reconciling the miners to the situation.

The miners and operators have paid the local efficiency committees for the time spent in committee meetings; this expense is temporarily suspended until July 1, 1918, in order to relieve the burden on the local unions where work has been discontinued temporarily.

Missouri has about 8000 miners; perhaps 15 or 20 per cent. of these are in comparatively small mines which ordinarily work only in the winter and which will have difficulty reassembling their forces if the mines are not operated this spring and summer. The miners' officials are doing their best to hold the miners together in the hope that arrangements can be made for the moving of the coal from the mines and its disposition so that the shafts can be kept in operation continuously this summer.

Every LIBERTY BOND you buy is safe financial investment in the future happiness and self-respect of your children. Buy as many as you can and let them inherit as good a country as you did.

Pay By the Ton or the Carload

The mine workers in West Virginia are still agitating in favor of payment by weight and not by measure. A large number of men are now paid by weight and that method of appraisal is certainly preferable, especially as it is the normal manner of payment in most states of the union, though there are exceptions in many of the states.

The convention of state sealers of weights and measures in West Virginia has advised that scales shall be installed on a solid foundation, of concrete where practicable and possible; that the foundation should be separate from the tippie; that all weighing shall be done within 200 ft. from the drift mouth of the mine and 2000 lb. shall constitute a standard or legal ton; that six additional state inspectors of weights and measures shall be provided to inspect mine scales; that justices of the peace shall have jurisdiction in trials for violations of weights and measures laws; that county sealers in counties of the first class shall be paid a minimum salary of \$150 a month and legitimate expenses; that counties of the second class the salary shall be \$100

a month and legitimate expenses; that the appointment shall be made compulsory on the counties and that the appointees shall be placed under the civil-service rules.

Lawrence Dwyer, international board member of District 29, says that the operators of the Winding Gulf region last November gave the miner an 8c. advance per car of three tons, whereas the requirement of the Washington agreement was for 10c. per ton, or 30c. per car. He also adds that the operators are getting a 45c. increase per ton as compensation for the 8c. advance to the miner and the increases granted to the other mine workers at the same time. In this biased statement Dwyer overlooks entirely the large and more important increases given to the day men.

Of course, the provision for weighing coal close to the mine mouth while it has its points of reason is objectionable unless it can be done mechanically. There are frequently several drift mouths to a mine, each producing a little coal. It would be inadvisable to require a man at each drift mouth to weigh the coal. We may be sure the



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Question of Stamina
Send—the Wheat
Meat·Fats·Sugar
the fuel for Fighters**

UNITED STATES FOOD ADMINISTRATION

miners would not want to pay for that number of check weighmen. The operators look to the weighman to be boss at the tippie and frequently to do the docking also. How can he dock the miner for dirty coal if inspection is denied him? So to the many new weigh bosses and checkweighmen necessary a dock boss would have to be added, and all this to protect the miners against the loss which occurs between mine mouth and tippie. This is unfortunately often considerable, and it does seem that at mines with steep planes the miner is entitled to have the weight taken at the top of the plane before the company spills his coal. But in most cases the uncertain loss from the bumping of cars in a trip would not pay the many check weighmen for which the state scales are indirectly asking.

When you buy a LIBERTY BOND you do two good turns—one to yourself and one to your country. LIBERTY BONDS are the best investment and they help have lives.



The Buying Line OVER HERE Helps the Firing Line OVER THERE



EDITORIALS

Do We Really Want To Win the War?

IF WE really want to win the war we shall have to go in a somewhat different way about it than we have gone hitherto. When a man decides to open a mine or build a house he does without this and that and scrapes the money together to get it. But now that we go to war, we do not show any such devotion. We hope to do just what we have always done, buy just as much as ever and purchase Liberty Bonds on the side, if there is anything left with which to do it.

This war is our leading interest and comes first. We cannot buy ships, munitions, an army, a navy, aeroplanes, railroad equipment and guns if we are investing as much as ever on ourselves. Something must be given up. The war cannot be won by the money we borrow to lend to the Government. It cannot be won by selling stocks and bonds and so obtaining money to lend to Uncle Sam. It cannot be waged by foreclosing mortgages and handing over such ill-gotten money to the nation, nor can we win it by uncovering hoarded money.

It is necessary that we should provide the money by present-day saving. He who does without and pays the money to the Government: (1) Releases labor for the Government service (2) releases material for the Government use and (3) gives the Government money to buy the released labor and material. If you go on buying just as ever, the Government must compete with you for labor, it must bid against you for material, and it must try to do it with the paltry sums of money you will be able to provide.

Spend meagerly and Uncle Sam can spend generously. Save manfully and the Government will be sustained by your savings. A billion dollars means \$10 per person; about \$50 per family. We must average a Liberty Bond per family for every billion dollars the Government demands. Three billion dollars will mean \$150 per family and five billion dollars \$250, or five Liberty Bonds.

Unfortunately we do not understand this. We formerly were in the habit of regarding billions as immeasurable quantities of money, but now we go to the other extreme and fail to realize how much privation they will mean to us who try to provide them. We put a button on our lapel—that is good for one billion dollars. We need one on every member in the family if we are going to do a full part to the purchase of a Liberty Loan issue.

Let us look at it another way. The gross income of the United States is only about forty billion dollars. A loan of a billion dollars represents 2½ per cent. on one's yearly income; a loan of three billion dollars is 7½ per cent. Just visualize it. It cannot be raised with housekeeping as usual, luxury as usual, comfort as usual, hours of labor as usual. It can be made only by a new life and a new purpose—a life and a purpose that might not be feasible, needful or perhaps even desirable for ever, but a purpose feasible, needful and desirable so long as the war lasts.

This is the meaning of the war to us. If we really want to win it, we must really want to provide the sinews of war. The country has fewer to do that work than it had before it sent the boys away with its blessing. We shall have to work hard and keep steadily before us what the war demands mean. It is our duty also as citizens to let other people know what it means. It is obligatory on us to preach and teach it everywhere to the end that the Third Liberty Loan will be oversubscribed like the two that have preceded it.

American citizens should buy LIBERTY BONDS, because they are for the purpose of maintaining the principles of the Declaration of Independence and the Constitution of the United States.

Miners Active "Over There"

FEW people know the important rôle being played by miners on the Western front. When the front-line trenches settle into the customary deadlock that has prevailed in France and Belgium for more than three years, mining operations are aggressively started by both sides, and the one that gets started first has the advantage and usually comes off victorious.

While it would not be politic to give current figures on this subject, some idea of the magnitude of the operations can be judged by the fact that 1 per cent. of the entire British forces were engaged solely in mining work some time ago. Assuming that the British Army totaled 5,000,000 men, this would mean that we would have to strip the State of Ohio clean of all the men engaged in the mining industry to equal this number.

In the real pioneer work in the front-line trenches the miner is substantially the most important personage there is in the engineer corps. It is no secret that 75 per cent. of the engineers' work at the fighting front is mining. This does not mean three-fourths of all the engineers in service, but only of the pioneer troops in the trenches.

In this class of work the miner is at home. The oppressive darkness of the underground galleries holds no terrors for him. He will recognize the mine-rescue station along the Western front and all the other appurtenances that have become a part of this highly developed phase of the Great War.

Mining organizations are being formed to meet the growing demand "over there," and will be one of the branches for which the First Replacement Regiment of Engineers at Washington Barracks, D. C., will receive recruits. This regiment has been organized for the express purpose of keeping all the different branches of the engineers abroad up to their full authorized strength. Applications for enlistment in this regiment should be addressed to the Commanding Officer, First Replacement Regiment Engineers, Washington Barracks, D. C.

Need for Providing Steady Work

THE working man must feed and clothe himself whether he works or not. Somehow he must spread his wage so that his annual needs are taken care of. It is therefore essential that he should work almost every day. Lack of cars, strikes, lack of orders, sickness, breakdowns and shutdowns need to be eliminated. No changes are more desirable than those which stabilize industry.

The report for the year 1916 just received from the United States Geological Survey shows that Oklahoma mines worked only 178 days in the year and Arkansas 184 days. This fact is an indictment on our methods of doing business. For some reason there is no adequate flywheel to keep business working regularly.

What we need is a greater differential between winter and summer prices, and it would appear that all the elements in coal service should be regulated so as to spread the production, transportation and delivery of coal more evenly over the whole year.

There was a time when the miner was willing to receive a lower rate of pay in summer than in winter. He might be willing to do that again. We do not advocate any real lowering of pay, but when a new scale is arranged why not put the bulk of the burden or all the burden on the winter months?

The railroads find the winter a trying time for railroading. The removal of snow is, of course, a heavy burden, but that has to be met in any event so there is not, for that reason, any purpose in reducing the amount of winter traffic. In fact the more traffic the better the managers, if not the investing public, are pleased, for where there is much traffic there is more tonnage over which to distribute the charge for snow removed. Still as stated the winter's snow has to be removed in any event whether the removal is paid out of summer or winter earnings.

But the railroads find that it is harder to haul trains in cold weather. The rails are slippery, the winds are high, the lubricant in the axle boxes is sluggish and the train crews are less efficient. The New York, New Haven & Hartford R.R. Co., using electric locomotives, estimates this loss in hauling ability per locomotive at 0.65 per cent. per degree below 55 degrees Fahrenheit.

The railroads have a direct interest in having the work of transporting coal either evenly spread or at a maximum in the summer months. They certainly cannot gain anything from the excessive activity of the winter season with its overcrowded switches, its delays and its embargoes. They could therefore well afford to ask that the bulk of the increases in the rates charged for transportation should be put on the winter business. We do not suggest lowered rates at any time, only an increase in rates confined to the winter schedule.

The operator has likewise an interest in summer operation from the fact that 100 per cent. business is better than 75 per cent. Not only does steady work give more satisfied men, it saves stand-by losses, all the losses of overhead; it cuts down pumping charges per ton of product. But it is unnecessary to argue the differential with the operator. He is the only wise man on the chain of coal handlers. He is always ready, if not willing, to forego his summer profits for the purpose of stimulating business in that season.

The jobber and retailer have a far greater interest in a brisk movement of coal in the summer. It is then that haulage in motor trucks and wagons is easy. It is then that the coal does not freeze. The barges are not interfered with in the summer. The summer work is the most satisfactory that is done. Moreover it is work that is not hurried and can be done therefore in the most efficient manner.

Everyone is interested in getting what the differential will provide, but only the operator is willing to provide it. Why, no one can tell. This is certain, however, that no one will provide storage unless he is reasonably certain it will pay him. The miner has an idea that the consumer ought to store coal, but when did any miner do anything for which he was not paid? Let us endeavor to get away from the idea that the consumer of coal will do in the name of patriotism and coöperation what the miner has never been willing to do.

No miner will work for wages to be delivered to him six months hence. Not one of them is willing to buy coal in the summer for the winter's use unless there is a differential. Why should the consumer pay for his coal in the summer and wait six months for the benefit unless there is a profit in his long wait? No miner would dig a cellar for another man to use. Why should a consumer dig one in which to store the miner's coal so that the miner will be able to work in the summer? The differential is the only cure for the present condition of unsteady work. The consumer should be willing to pay it in the winter, and miner, operator, railroad, jobber and dealer should be ready to accept it in the summer months.

Time enough to beat the sword into ploughshares after the Kaiser is beaten into submission. The THIRD LIBERTY LOAN is an effective weapon against him.

Improve Our Transportation Facilities

IT has become perfectly evident to all observers that the capacity of the nation for production of war material is enormously greater than its capacity for shipping it to Europe, and that we must at once not only balance this production, but slow it down in order to prevent such a choking of our Eastern ports as may produce an impossible condition. The answer comes that if we are making too much war material we had better turn some of our activities into the manufacture of articles of peace. Immediately we run into the financial situation, which at present seems to seriously hamper new undertakings.

It would seem that the claim of the railroads that they need \$1,000,000,000 worth of improvements should at this juncture be considered. Here is one organization now devoted exclusively to the service of the community, which, being under the control of the Federal Government, can be financed directly by that Government, and there would seem no reason why the production programs of war material should not be limited, and a certain amount of the energy now being expended in that direction turned at once toward the improvement of our transportation facilities.

DISCUSSION BY READERS

Composition of Natural Gas

Letter No. 1—A short time ago there appeared in *Coal Age* an interesting bit of correspondence with regard to the composition of natural gas and it inclined me to think that the following reference to an unusual gas analysis would be of interest. The full text of the report on this gas is to be found in the 1918 Year-Book and Souvenir Program of the Spokane Mining Convention, on page 87, under the title:

EXPLORING FOR WASHINGTON OIL

"National gas and oil fields have not been developed to any extent in the Pacific Northwest, but there are indications of both oil and gas In at least one district natural gas has been found in quantities that suggest important possibilities and the probability, also, of oil deposits of value. This district is Beaton County, Washington, near the center of the state.

"The Spokane-Benton Natural Gas Co. are the operators and they propose to pipe the gas to Spokane, a distance of 120 miles. One well is producing one million cubic feet of gas per diem, from a depth of 706 ft. A pond of water on the anticline keeps at one level all the time and has a scum of petroleum oil always showing on the surface.

"The analysis of the gas is the remarkable point, this analysis gave methane 76.6 per cent., ethane 12 per cent., propane 7.20 per cent., butane 8.80 per cent. and oxygen 0.40 per cent."

It may be remembered that in my previous communication on this subject I referred to the occurrence of other gases than methane, and also of hydrogen. I am satisfied that if other gas-well products were examined and reported on we might have very valuable information in regard thereto. It is the belief that the gas reported above is a wet gas. **JAMES ASHWORTH,**
Vancouver, B. C., Canada. Mining Engineer.

A LIBERTY BOND will pay you interest on the future of America. Defeat will make you pay compound interest on the future of Germany.

Experiences in Gas

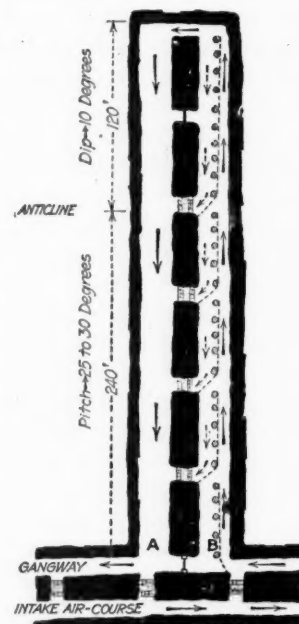
Letter No. 1—The account given by Jacob Riley, *Coal Age*, Feb. 9, p. 302, of the plan he adopted to remove a body of gas from the face of a heading, recalls an instance in my own experience that required considerable perseverance in order to successfully remove the gas from a couple of chambers driven to the rise of a gangway.

In this case, the chambers had been driven up a pitch of 25 or 30 deg. for a distance of 240 ft. from the gangway, where an anticline in the measures caused the seam to dip at about 10 deg. for a distance of 120 ft. to the face of the chambers.

As I have shown in the accompanying sketch, these two chambers were connected by six crosscuts. The first four of these crosscuts had been walled up with

good stoppings, while No. 5 was closed by a brattice and No. 6 crosscut at the face remained open. In addition to the pitch and dip of the chambers that I have mentioned, there was a cross-pitch of about 6 deg. from chamber A to the one marked B. At the time of my story, these chambers were found to be full of gas from the face to the gangway. In the sketch, the arrows show the direction of the ventilating current, which was conducted to the face of the air-course or heading and returned to chamber B where it was deflected to the face by a door on the gangway and returned through chamber A.

These two chambers having filled with gas, owing to a temporary derangement of



REMOVING GAS FROM
PITCHING CHAMBERS

the circulation, it was found that when the air current was restored it proved not strong enough to remove the gas. Most practical firebosses will agree that the place to start to remove the gas from these chambers was at the mouth of chamber B.

As shown in the sketch, a brattice was erected at the corner of the gangway stump so as to deflect the air into chamber B. By extending this brattice one length at a time, the gas was removed as far as the first crosscut where further progress was arrested, the gas then proving too strong for the air. Increasing the current by every means available did not alter the situation, and the experiment was tried of opening No. 1 crosscut by breaking a hole through the wall.

As indicated in the figure, a canvas was started from the corner of this crosscut and carried across the chamber to where a line of brattice could be extended up the pitch along the opposite rib. This had the desired effect and the gas was removed as far as the second crosscut, by extending this brattice one length at a time as before, the gas passing out through the hole in No. 1 crosscut.

The hole in No. 1 crosscut was now closed, and a similar hole opened in No. 2 crosscut. The same plan was then carried out and the gas removed from the chamber up to No. 3 crosscut; and then, by the same plan, No. 4 crosscut was reached, which was at the anticline. Beyond this point there was no further trouble in removing the gas by extending the brattice

down the dip to the face, setting the posts and hanging the canvas 2 or 3 ft. from the rib.

What made the gas difficult to remove, in this case, was the fact that, owing to the pitch of the formation, sidewise, from chamber A to chamber B, the gas tended to drift from chamber A to chamber B, which made it difficult to work the air against the gas in ascending the pitch to the anticline. Beyond the anticline, the tendency of the gas to rise from the face to that point assisted the work of its removal from the chambers.

The work, of course, was all done with safety lamps, and no men were permitted to remain in the mine except those engaged in removing the gas. Believing that the method adopted here would prove of interest to other firebosses when working under similar conditions, I have tried to describe the plan adopted as clearly as possible.

L. R. THOMAS.

Edwardsville, Penn.

Conscription limits the age of the fighting man to thirty years, but there is no age limit for buying LIBERTY BONDS.

Loading and Shipping Clean Coal

Letter No. 1.—Reading the many interesting letters in *Coal Age* makes me wonder that any mine official can afford to be without the paper. There is one item referred to in the letter of W. R. Jones, on "The Fuel Situation," Mar. 16, p. 513, that I feel should be fully discussed, especially at the present time, when there is a strong temptation for miners to load dirty coal and for operators to ship an inferior quality of coal, believing that the great demand for fuel will excuse the practice.

Looking back a few years, I recall a time when a certain mine official gave orders to load out certain inferior qualities of bony coal that had been discarded and thrown into the gob, claiming that the company could sell the stuff for coal at that time. At some other operations in that vicinity teams were loaded at the rock dump with the same discarded bone that had been thrown out previously as unmarketable. This stuff was hauled to the railroad, loaded and shipped as coal.

It cannot be denied that a similar condition exists today, and that large quantities of unsalable stuff is being shipped to market for coal. At times the character of the material has been such that it could not be burned on the furnace grate, under forced draft, without being mixed with coal of good quality, and then only at a great loss in heat value.

Operators guilty of such a practice fail to realize that little is required to start a bad habit that it will take weeks and months to overcome. It is of the utmost importance, then, that everyone, operators and miners alike, use their best efforts to load and ship clean coal. The best quality of coal is required now more than ever, as only a good grade of fuel can give the highest efficiency when burned in ships, munitions plants and other industries working to win the war.

It is gratifying to note the patriotic action of many of the officers of the United Mine Workers' organization, who have not hesitated to address their members and urge the need of loading clean coal if they desire to assist the Government in the present war crisis. I

noticed that a board member, Peter Farrar, and a district organizer, Patrick Eagen, proved their patriotism recently when addressing a local meeting of the miners, by urging with great emphasis the need of every man loading clean coal to be sent to the top for shipment.

It is to be hoped that all officers of the union and officials of mining companies everywhere will do the same and urge their men to put their shoulders to the wheel and do their part to keep the fires burning and win the war.

JOHN BUGGY.

Chambersville, Penn.

You must buy or pay—buy a LIBERTY BOND or pay Germany.

The Fuel Situation

Letter No. 3.—The discussion of this question, recently started in *Coal Age*, should result in throwing much light on the actual situation regarding the coal supply of this country. Let us hope that it will receive the earnest attention of coal-mining men.

The daily press still contends that a coal shortage threatens the entire country, claiming that the production of bituminous coal fell far short of the requirements during the last two months, which is quite true, owing to the unprecedented demand for fuel to supply the bunkers of the navy and industrial power plants, whose activities have been more than doubled in attempting to furnish what the war demands.

The prediction that the output of coal in this country will be 40,000,000 tons less in the present year than in 1917 and the quoting, by uninformed reporters, of other misstatements of so-called statistics are calculated to stir public opinion and cause the lash to be used where it is least deserved. Such reports are conspicuous for their destructive rather than their constructive policy, and for their failure to fix the responsibility for the actual shortage of coal.

In contrast to this condition it is observed that the coal mines, in many parts of the country, are working little more than half the time and miners are drifting from place to place in search of regular work, telling their hard-luck stories of the scarcity of jobs. In some respects the situation is similar to that which prevails when cars are plentiful and there are no coal orders.

EFFORTS OF THE GOVERNMENT

Knowing the ability of the coal mines of the country to handle an aggregate output of 100,000,000 to 150,000,000 tons more than the present yield, the Fuel Administration has very properly been organized, as an arm of the Government, for the purpose of securing an increased production of coal. As suggested by N. H. S. in his letter, *Coal Age*, Mar. 2, p. 428, it is probable that the Administration should have adopted a more liberal and expansive policy and turned its attention earlier to the great underlying cause of the coal shortage, which has been found to be the transportation problem.

From all appearances it would seem that the railroads are striving to do their bit in the trying situation, but are practically unable to handle the coal that the mines can produce. I agree with N. H. S. when he says that "what the nation needs is constructive criticism." In general we are inclined to criticize by tearing down in-

stead of lending a hand to build up and supply what is needed.

Few of the contributors to these columns, it may be assumed, have a knowledge of the first principles of transportation and would care to chance the deserved laugh by assuming to dictate a policy intended to unravel the transportation entanglement. Such an attempt would sound ridiculous to the well informed, and the guilty one would be quickly "railroaded" back to the mine where he belonged. Nevertheless even an amateur efficiency expert may suggest something that might prove of service to your Uncle Samuel in his hour of trial.

TRANSPORTATION THE REAL PROBLEM

It is evident to the onlooker that the great need of the railroads today is more cars and engines. We understand that there are thousands of railroad cars sidetracked over the country and awaiting repairs. It is natural to assume that the Administration is making every effort to have these cars repaired and again put in service, but the work progresses slowly owing in part to a lack of material and in part to a want of labor, since the work affords a lower wage than can be secured elsewhere. It is human nature for a man to prefer to work one or two days a week at \$5 a day than to work six days out of the week for a less wage.

I have wondered if it would be impracticable to use some of these cars that are partially defective through the lack of one or more minor parts on short hauls and level grades where the standards of safety are not so severe, and thereby release other cars for service on the main lines.

As has been suggested at different times, use can be made of the lakes, canals and navigable rivers in many instances, which would relieve the congestion of traffic on the railroads. More barges should be built for this service. If necessary river towns like Pittsburgh might even be permitted to stock the coal, for distribution later when the congestion of traffic is not as great as at present. Large transportation should be encouraged everywhere in order to release, as far as possible, cars for the transportation of coal to inland towns and other points not reached by water. Present indications are that the coal shortage will exist next winter if it is not felt during the coming summer. W. H. NOONE.

Thomas, W. V.

You owe a debt of freedom to America. Buy a LIBERTY BOND and pay the debt.

Examination of a Mine

Letter No. 5—As James H. Taylor has intimated in his letter, *Coal Age*, Mar. 9, p. 472, it is too often the case that the fireboss in a mine is made the "goat." My experience of 15 years in this state enables me to say that this is frequently true in Colorado. The fireboss in our mines has not the authority to act but, as has been stated by Robert A. Marshall (Feb. 2, p. 256) he must obey the orders of the mine foreman and do the work given him.

Since the introduction of electric mine lamps in coal mining the idea has become more or less prevalent that

there is not the same need of taking precautions in regard to gas as when the mine was worked with open lights or safety lamps. It is commonly believed that the use of electric mine lamps makes it almost impossible for the gas to be ignited. For this reason the work of the fireboss is much underestimated and it would seem that almost anyone is thought to be capable of performing the duties of a fireboss, just so he complies with the mining law.

I fully indorse the suggestion made by Mr. Taylor that all firebosses should act as assistant mine inspectors and be appointed by the state inspector and under his jurisdiction. The fireboss would then be free to perform the duties of his office without fear or prejudice, since the mine foreman would have no authority over him.

There is, again, another consideration affecting this question, which is that the mine foreman would exert more care in the operation of a mine in his charge and give more attention to matters relating to safety if the fireboss was a state officer. The foreman would then live in daily fear of a bad report of the mine being sent to the state mine inspector.

In any event it is my conviction that the safe operation of a mine demands the constant inspection of the working places by the fireboss, who should devote all of his time to that end. The numerous other things that he is now called upon to do, such as hanging doors, building stoppings, repairing curtains, etc., should be done by someone else than the fireboss.

Under the present system, which is the custom in this state, the fireboss has little time to devote to the examination of the mine during working hours, this work being wholly confined to his first examination of the mine in the morning, before the men go to work. Allow me to say that, in my opinion, the fireboss is the most important man in a coal mine and should be so considered in the interest of safety. COLORADO MINER.

—, Colo.

The price of a LIBERTY BOND is \$100. The price of defeat in the war is a lifetime of servitude to German interests.

Miners and the War

Letter No. 9—Coal mining is an industry that has suffered greatly during the past year, owing chiefly to the scarcity of labor and the shortage of cars to transport the coal to the markets, but, as has been said, the Government is making every effort to counteract that difficulty by assuming control of the railroads and assisting them to handle all the coal that the mines can produce without further delay.

At the present time, it is up to the miners themselves to keep the markets supplied with coal this summer and the coming winter and avoid another great coal shortage that caused so much suffering last winter. The companies are planning for a larger output this year than ever before. And with the coöperation of the miners there is little doubt that the year 1918 will never be forgotten for record production of coal.

With an increase output of coal there will be a larger production of other materials all of which go to help win this great world war. The miner, therefore, holds

a position that places him in the forefront of the great army that is struggling for democracy. While the miner is at home, it does not follow that he is not doing his bit for his country. The President has said that if the miner and farmer fail, armies and statesmen are helpless. Now is the time, then, for the miner to show the President that he is behind him in his hour of trial.

The way for us miners to do our part is to report for work on all the coming holidays and work the mines to their fullest capacity. Then, we can say that we have done our duty, but we will not be able to say that until we have taken our share of the war on our own shoulders. So let's get together, boys, and make this a banner year for the mines. Hoist old glory to the top of the pole. Wave the Stars and Stripes over Germany and free the world from Prussian militarism.

Plymouth, Penn.

A MINER.

Buy LIBERTY BONDS because you want your daughter and her children (when they come to her) to enjoy the freedom of American life, American institutions and American Liberty.

Shotfiring re Explosion

Letter No. 8.—I glean from the reading of John Verner's letter, *Coal Age*, Jan. 5, p. 33, that the miners in Iowa were permitted to fire their own shots, at the end of each shift, and that ordinarily two or more shots were fired in each working place, with the result that the shots following the first, in a place, "had to be fired in the presence of a hot, dense cloud of powder smoke produced by the preceding shot or shots."

Mr. Verner states that this practice continued during a period of many years and claims that the results showed that the powder smoke had a quenching effect on the flame of a possible explosion. He argues therefrom that "a reduced circulation of air in the workings of a mine, at the time of firing, lessens the liability of an explosion taking place."

REASONS FOR NOT REDUCING CIRCULATION AT FIRING TIME

Kindly allow me to give a few reasons why I consider these conclusions are wrong:

1. Coal-mining conditions seem to require that, in the use of black powder, the exposure of new faces of coal caused by the firing of shots affords a greater emission of gas as the work proceeds and a larger production of fine coal dust, either of which, combined with the hot powder smoke produced in firing, will generate an explosive mixture that should not be allowed to accumulate in the workings.

2. When shots are fired in a reduced quantity of air in a mine, no one can tell just what is going to happen. The shots may liberate a feeder of gas in the coal or a sudden inrush of gas may result from a heavy fall of coal or roof. Few mining men will be willing to say that it is safe to experiment with a reduced circulation of air, in the face of these conditions.

3. Assuming that the mine workings are extensive and a considerable area of goaf exists, containing accumulations of blackdamp and possibly other gases, the fall of pressure caused by reducing the circulation in the mine will produce an outflow of these gases onto

the main roads, which may hinder the escape of the men after firing their shots. I note that Mr. Verner frankly admits that the mixture of gases produced, in blasting in a close place, is injurious to health and may even prove dangerous to life.

4. In my judgment, the firing of two or more shots, which means as many as the miner chooses, in a working place at one time is an unsafe practice and, if allowed, would require the thorough ventilation of the place where the shots are fired.

I fully agree with R. W. Lightburn, who states, Feb. 9, p. 301, that "in order to properly and safely perform this work, it should be done in an abundance of pure, fresh air." My opinion is that the quantity of air circulating in a mine should be increased, rather than decreased, at the time of firing, in order that the gases, produced by the explosion of the powder and otherwise, would be swept out of the mine and the working faces kept clear of any explosive mixture.

In closing, let me say that an experience of 20 years in shotfiring and bossing, as mine foreman, has taught me that the first consideration in all mine work is the safety and efficiency of its performance. I consider it an unsafe practice for a man to thrust an open light into a crevice behind a shot where an explosive mixture may exist and result in disaster and loss of life. In general, I would say that any condition that involves a deficiency in the oxygen content of mine air is injurious and unsafe.

J. M. RODDY.

Springfield, Ill.

Letter No. 9.—I fully agree with the conclusion of R. W. Lightburn, *Coal Age*, Feb. 9, p. 300, as to the necessity of having plenty of fresh air circulating in a mine, at the time of firing shots. This will not only allow the shotfirers to work in pure air, but the smoke and gases produced by the firing of previous shots are swept into the return airway and carried out of the mine before they can do any harm. It is assumed, of course, that the work is properly started on the end of the air and that the shots are fired in regular order, advancing against the air current.

I cannot agree with Mr. Lightburn, however, when he asks, "Is it not true that, in a limited supply of air, a larger quantity of carbon monoxide will be produced?" My opinion is that when a shot is properly tamped the mine air is completely excluded and the combustion of the carbon is supported by the oxygen contained in the powder. This being the case, the gases resulting from the combustion are independent of the oxygen of the air.

If it were true that the complete combustion of the powder depended on securing the necessary oxygen from the air, it would follow that the explosion of the powder in blasting must be completed in the air, which Mr. Lightburn will probably agree is only true of a windy or blownout shot where the force of the explosion is partly expended on the air.

In the same issue of *Coal Age*, page 301, R. J. Pickett expressed the belief that "present-day methods of mining and blasting coal are responsible for the explosions that occur so frequently in blasting." He mentions the old practice of firing shots by the use of a needle and squib. Does he mean to say that men using these former methods and knowing that their daily

wages depend on the amount of coal they can blast down and load out are safer miners than the shotfirers of today, who are specially trained for that class of work and responsible to a Mines Department for its proper performance?

What appeals to me as the chief cause for the frequent explosions resulting from shotfiring is the continued use of a long-flame explosive such as black powder. Frequent reference has been made to the danger of the use of black powder in blasting coal. In the 30 years of my experience in coal mining. I have never known of an explosion being traced directly to the firing of a blast when the explosive used was one named in the permitted list of this province and required by the Mines Regulation Act.

SAFETY IN USE OF PERMISSIBLE EXPLOSIVES

There is always an element of danger attending shotfiring in coal mines; but the danger is reduced to a minimum by using a permissible explosive, because of the short flame and comparatively low temperature of the explosion. It has been shown that the ignition of a firedamp mixture requires a temperature of 1200 deg. F., which must be maintained a certain length of time before the gas can be ignited.

The presence of fine inflammable dust floating in the air lowers the temperature of ignition of firedamp and the mixture is inflamed more readily. On this account the use of the short-flame permissible explosives is important in a dusty mine generating gas. These conditions have led manufacturers of explosives to introduce certain ingredients that will exert an extinctive effect on the gases produced in the explosion.

In my opinion the surest safeguard against explosions occurring in blasting is the employment of thoroughly trained and experienced shotfirers who will fire but one shot at a time in a single place and who are authorized to examine, charge and fire all holes that, in their judgment, are unsafe.

The use of an electric battery for firing the shots will also, I believe, reduce the number of fatal accidents due to blasting. Under these conditions it is my belief that the more fresh air in circulation at the time of firing the greater safety will be secured in the performance of the work.

JAMES TOUHEY.

Cumberland, B. C., Canada.

If you can't go to the front yourself, put your name on your money and send it. A LIBERTY BOND does it.

Favoritism in Mine Management

Letter No. 4—The letters on this subject have been interesting to me, and, while I cannot agree with some things that have been said, there is much that is undoubtedly true with respect to the incoming of a new superintendent and his treatment of the old employees.

It is not always the case, however, that a new man will cost the company thousands of dollars, as one correspondent would have us believe. A new man is bound to bring with him and, in time, introduce into the mine new ideas and new methods. But, no wise and practical man will attempt radical changes in the

operation of a mine immediately upon his assuming authority.

Any man of executive ability will be willing to admit that such a course as that just mentioned will almost invariably fail. A man of experience on taking a new position will recognize his responsibility and proceed with caution. He will allow things to follow along the old lines, and gradually correct minor difficulties but leave more important changes until he has become thoroughly familiar with all the conditions existing in the mine.

It is evident that a new man cannot show the best results when starting a new plan or making an important change in methods, but time will prove or disprove the wisdom of making the change. It is not to be supposed that a new plan will always work out successfully. In some instances, the attempted improvement will result in failure, although the experiment was worth the trying.

SUCCESS IN FAILURE

Speaking of failures, give me the man who is willing to admit that he has one or more failures to his credit, rather than one who boasts of unvarying successes. It is the ability to accept a situation, admit failure, and start afresh that makes men strong. Such men are prepared against future reverses that are sure to come sooner or later.

In arguing this question, reference has been made to the fact that workers are frequently skeptical about accepting the new rules or adopting a new system introduced by a newly appointed superintendent. It is my experience, however, that where fairness has characterized the new official and still there are those who murmur and complain in regard to his management, they will generally be found to be the ones who stood in with the former boss and were his particular favorites.

WHO COMPLAIN OF "FAVORITISM"?

It is my belief that men who complain the most about favoritism being shown to others belong to one of two classes: (1) Those who were specially favored by the boss before the change was made and, as a result of the change, lose their prestige. (2) Those who, in a spirit of demanding their rights, complain that justice has not been accorded them. The latter class, generally, have no difficulty in securing a hearing with any boss who is fair, and he it is who is able to hold the respect of all his men.

There is an old saying: "Play favorites and make enemies." Fairplay is always recognized and commands the respect of every honest worker. In all positions of responsibility, a man should resolve to play fair and have no favorites. Favoritism in a boss makes few friends—I would say very few—but many enemies.

Let me suggest that, in contemplating changes, a newly appointed superintendent, if wise, will undertake the same gradually, giving time for the advantage of the change to be shown by the results, before completing his proposed plan. By this means, prejudices, which are often strong, are overcome and ill feeling avoided. The impartial boss makes for efficiency, which is the watchword in the industrial world today.

Golden, Colo.

FRED L. SERVISS.

INQUIRIES OF GENERAL INTEREST

Reversing a Mine Fan

I want to ask why the mine law of Illinois requires that the fan be reversed in case of an explosion occurring in the mine. I have studied over this matter considerably and fail to understand how such a requirement could be made a part of the law.

I reason as follows: Assuming that I was at work in a mine at a time when an explosion occurred at some point in the workings, suppose that, being thoroughly familiar with every portion of the workings and, understanding the direction of the ventilating currents, I undertook to lead the men out of the mine by a route that I believed would enable us to reach fresh air the quickest. Now, if the fan was to be reversed, the air current circulating in the mine would be changed, with the result that my calculations would all be wrong and we would soon find ourselves enveloped in the smoke and afterdamp of the explosion.

Or, again, assuming that two or more panels in a mine are ventilated by the same air split and that an explosion takes place in one of the panels, let me ask if it is not probable that the reversing of the fan would result in a second explosion taking place.

In my opinion, the reversing of the fan following an explosion in a mine would be a grave error and endanger the lives of any men who may have survived the explosion and who were working their way out of the mine by a chosen route that they hoped would enable them to reach fresh air without coming in contact with the afterdamp.

Harrisburg, Ill.

INQUIRER.

As far as our knowledge goes, the Coal Mining Laws of Illinois, as revised and approved June 28, 1915, contain no provision authorizing or suggesting the reversal of the mine fan following an explosion in a mine. As has been suggested by this correspondent, such a proceeding would endanger the lives of any persons who may have survived the explosion. Mine workers should always be assured that, in case of trouble or disaster occurring in the workings, there would be no change made in the circulation of the air currents due to the reversing of the ventilating fan.

It is true that conditions might exist that would cause a temporary reversal of the air current in one or more sections of the mine. This, however, would be unavoidable should it occur, and its effect would generally be only temporary, as the pressure of the general circulation would tend to overcome those local conditions to which reference has been made.

A safe rule to follow, in respect to the circulation of air in a mine, is that the reversal of the fan should only be considered as a last resort in an extreme case, where the conditions following the explosion are found to be such that to maintain the old circulation would mean the destruction of the only avenues of escape for the unfortunate men entrapped in the mine.

A fire at or near the foot of a downcast shaft or slope, or on the intake airway of a drift mine, may make it wise or necessary to change the direction of the circulation by reversing the fan, unless it is possible to short-circuit the air current at a point inby of the fire and thereby prevent the smoke and gases generated by the fire from being carried into the mine. This is almost the only instance that would warrant the reversing of the ventilating fan.

Centrifugal Pumping

Kindly permit me to submit the following question regarding the operation of two centrifugal pumps. These pumps are capable of delivering 1500 gal. per min. under a head of 125 ft. when running at a speed of 1750 r.p.m. The driving unit is a 150-hp. Westinghouse motor, which is set up between the two pumps, one being on either side of the motor.

I would like to ask, what head would these pumps operate under when connected up in series; that is to say, so that one of the pumps will discharge into the other. Also, with this arrangement, what should be the capacity of the two pumps and would the motor be overloaded by this arrangement? Is it necessary to lubricate graphite bearings?

Seward, Penn.

CHARLES MARTIN.

A prominent manufacturer of centrifugal pumps to whom this question was submitted stated that it would be better to ask the information desired of the manufacturer of the pump, since much depends on the particular type of pump and details of construction. However, assuming that each of the pumps mentioned by this correspondent is good for a 125-ft. head ordinarily the two pumps when connected in series would be capable of handling practically the same quantity of water under double the head of a single pump.

Again, assuming that these pumps are designed for a capacity of 1500 gal. per min., under a 125-ft. head, the two pumps working in series should be able to handle about the same amount of water against a head of 250 ft.

Replying to the question of overloading the motor in this operation, it may be stated that a peculiarity of the centrifugal type of pump is that the horsepower required for its operation increases as the head decreases, in a pump designed for a given service. Also, the pump will develop its maximum efficiency at a given speed. For these reasons, when the two pumps in question are not operated under the full head for which they are designed, there would be a tendency to overload the motor.

The lubrication of the so-called graphite bearings is generally supplied through an oil reservoir connected with the bushing of the bearing. It is necessary to keep the graphite, which is contained in grooves cut in the bushing, in a moist condition.

EXAMINATION QUESTIONS

Miscellaneous Questions

(Answered by Request)

Ques.—If 40,000 cu.ft. of air is to be delivered per minute; (a) what should be the diameter of the port of entry of a fan having two ports [the fan being double intake]? (b) What should be the width of the fan blades?

Ans.—(a) For a double intake fan, circulating a quantity of air (Q), the diameter (d) of the port of entry or the intake circle is found by the formula

$$d = 0.023 \sqrt{Q} = 0.023 \sqrt{40,000} = 4.6 \text{ ft.}$$

(b) In a properly designed double-intake centrifugal fan the width of the fan blades may be taken as $\frac{1}{2}$ of the diameter of the intake orifice. Applying this rule, the width of the blades, in this case, would be $\frac{1}{2} \times 4.6 = 2.875$ feet.

The diameter of the intake circle is therefore 4 ft. 7½ in. and the width of the fan blades is 2 ft. 10½ inches.

Ques.—An entry in a mine is 7 x 10 ft. in section and 6720 ft. long; what is the velocity of the ventilating current passing through this entry when the water gage stands at 2 inches?

Ans.—First, find the rubbing surface and sectional area of the airway and the unit pressure corresponding to a 2-in. water gage; thus, $s = 6720 \times 2(7 + 10) = 228,480$ sq.ft.; $a = 7 \times 10 = 70$ sq.ft.; $p = 2 \times 5.2 = 10.4$ lb. per sq.ft. Then, substituting these values in the formula for the velocity of the air current we have

$$v = \sqrt{\frac{pa}{ks}} = \sqrt{\frac{10.4 \times 70}{0.00000002 \times 228,480}} = \text{say } 400 \text{ ft. per min.}$$

Ques.—A point that may be designated as B is 33 yd. east of another point A ; a third point C is 18 yd. north of B ; and a fourth point D is 24 yd. east of C . What is the distance from A to D ?

Ans.—From the data given the point D is $33 + 24 = 57$ yd. east and 18 yards north from A . Therefore, the distance from A to D is equal to the hypotenuse of a right triangle whose sides are 57 and 18 yd., respectively. The length of the hypotenuse AD is therefore $\sqrt{18^2 + 57^2} = 59.77$ yd.

Ques.—How many cartridges 24 in. long and 1½ in. diameter can be made from a full keg of powder 11 in. long and 9 in. in diameter?

Ans.—The cubic contents of this keg is $11(0.7854 \times 9^2) = 699.787$ cu.in. The volume of a single cartridge is $24(0.7854 \times 1.75^2) = 57.72$ cu.in. Hence, the number of cartridges that can be filled from a single keg, in this case, is $699.787 \div 57.72 = 12.1$, or slightly over 12 cartridges.

Ques.—Suppose that, in a fiery mine, the quantity of air in circulation is 175,000 cu.ft. per min., measured on the return, and contains 4 per cent. (or 1 in 25) of firedamp when the barometer is 30 in. (a) What quantity of firedamp is given off in the mine? (b) What is the least decrease of the quantity of air that will

render the return air explosive? (c) What increase of gas will render the return air explosive?

Ans.—(a) In this case, the gas being $\frac{1}{25}$ of the volume of the return current, the quantity of gas given off in the mine is $175,000 \div 25 = 7000$ cu.ft. per min.

(b) The lower explosive limit of pure methane and air is reached when the proportion of gas to air is 1:13; and, at this point, the firedamp mixture would be 14 times the volume of the gas, or $14 \times 7000 = 98,000$ cu.ft. per min. Therefore, the decrease in the quantity of air that will cause this condition is $175,000 - 98,000 = 77,000$ cu.ft. per min.

(c) To produce the same condition by an increase of the quantity of gas would require $175,000 \div 14 = 12,500$ cu.ft. of gas per minute. The required increase in the volume of gas is therefore $12,500 - 7000 = 5500$ cu.ft. per minute.

Ques.—How many 3-in. pipes will be required to run off as much water as one 12-in. pipe, all the pipes being of equal length?

Ans.—For the same head, the flow of water in each pipe is proportional to the square root of the fifth power of the diameter of the pipe. Hence, the number of 3-in. pipes that will carry the same volume of water as one 12-in. pipe, under the same head, is equal to the square root of the fifth power of the ratio of the diameters. The ratio of the diameters being $12 \div 3 = 4$, the number of 3-in. pipes required is $\sqrt[5]{(4)^5} = 4$ pipes.

Ques.—The airways of a mine are one mile long and the water gage is 0.7 in. If the length of these airways is now increased four times and the velocity of the air current is also increased from 500 to 700 ft. per min., what will be the water gage reading?

Ans.—The unit pressure or the water gage due to the circulation of an air current in a mine or airway varies as the length of the airways and the square of the velocity of the current. In other words, the water-gage ratio is equal to the product of the length ratio and the square of the velocity ratio, which gives, in this case

$$\frac{w.g.}{0.7} = \frac{4(700)^2}{1(500)^2} = 4\left(\frac{7}{5}\right)^2 = 4 \times 1.4^2 = 4 \times 1.96 = 7.84, \text{ say } 8 \text{ in.}$$

Ques.—If 20,000 cu.ft. of air per minute is passing into a mine, how would this quantity divide itself between two splits of the following dimensions:

- (a) 4 ft. high, 12 ft. wide and 14,000 ft. long;
- (b) 6 ft. high, 8 ft. wide and 16,000 ft. long?

Ans.—The air current will divide equally between the two splits given in this question, because they have equal sectional areas and equal amounts of rubbing surface. The sectional area (a) and rubbing surface (s), in the two splits, are as follows:

Split A, $a = 4 \times 12 = 48$ sq.ft.

Split B, $a = 6 \times 8 = 48$ sq.ft.

Split A, $s = 2(4 + 12) 14,000 = 448,000$ sq.ft.

Split B, $s = 2(6 + 8) 16,000 = 448,000$ sq.ft.

COAL AND COKE NEWS

Harrisburg, Penn.

In a resolution adopted by 300 coal operators in the central bituminous field, meeting at Altoona at the call of J. P. Cameron, district representative of the state fuel administration, the shippers urged that if all priority orders and assigned cars were abolished production would be increased, labor unrest assuaged and discrimination ended. The present method of assigning cars for railroad fuel supply was also disapproved. A more equitable method was asked and the matter was left in the hands of a committee of fifteen with instructions that it be taken up with the Fuel Administration and the Director General of Railroads.

Stimulated by the note of impending labor trouble, if the present method of car distribution is continued, the operators pledged themselves to cooperate with the district representative so that he can distribute equitably among the shippers emergency tonnage required by the Government. He has been unable to do this because operators have neglected to give him complete reports as to the amount of coal produced.

That 1,000,000 tons of coal could be transported each year from the anthracite fields of Pennsylvania to tidewater by boat if some part of the \$500,000,000 Government appropriation for shipbuilding were used to build 200 barges will be made the substance of a report to the railway administration in Washington by William H. Schoff, secretary-treasurer of the Atlantic Deepwaterways Commission, who has completed a two days' inspection of the old Schuylkill canal from Fairmount dam to Port Clinton.

Birmingham, Ala.

Mining operations in the Birmingham district are picking up steadily, and the coal output is correspondingly on the increase. Despite the bad start in January and part of February operators assert there is no doubt but that a record production is certain for 1918. Announcement that the Tennessee Coal, Iron and Railroad Co. will open a new mine in Blue Creek will be followed shortly by other announcements of equal importance, gossip in mining circles here indicate. The Cullman Coal Co., before the year is out, will be mining coal on a large basis at Bremen, in that county, while in Walker and even in Jefferson County new developments are promised.

The coke market in the southern territory is strong. Many of the larger consumers are making inquiries here for coke and local representatives are being provided. Harold McDermott, of the New Castle Coal Co. is working on possible contracts for the Guggenheimer interests in the smelting line, but so far as can be learned there has not been a great amount of the product obtained for that concern. Government prices prevail for both coal and coke and there is contentions as to prices.

Labor in the mining sections of the state is doing better, though the men are not striving for limit production. In other words, there are many men working in the mines who will not put in a full day, nor will they work a full week. The earnings of short time apparently are sufficient to satisfy their needs as a result of the advance scale now being paid.

A final showing of coal immediately available for river transportation, character of craft now on the river and other data regarding the Warrior River development has been prepared by the Birmingham district operators and will be forwarded to Washington the latter part of this week. The data is intended for presentation to Secretary McAdoo before the consideration of the Warrior development is resumed two weeks hence. Mr. McAdoo has taken personal charge of this proposition and, as a result, river coal operators expect quick results. As to the amount of good bunkerage coal immediately available from running mines the following data showing daily capacity is authoritative:

Sipsey mine, 1000 tons; Empire, 1000 tons; Dilworth, 250 tons; Summit, 150 tons.

Total in Black Creek seam on the Frisco, 2400 tons.
Corona, 500 tons; Coal Valley, 1500 tons.
Total in Corona seam, on the Southern, 2000 tons.

Total available by short rail hauls to the river 4400 tons.

Payne's bend, 500 tons; Maxine, 500 tons.
Total Pratt seam, 1000 tons.

Grand total of bunker coal available 5400 tons daily, or 1,620,000 tons per annum. Bunkerage needs are estimated at 1,000,000 tons per annum. The Warrior River showing more than covers the situation.

Charleston, W. Va.

The Ohio River bids fair within the next few years to become as important a channel of commerce as it was before the advent of many railroads. Numerous projects are on foot to restore the Ohio to its former commercial status. Capitalists of Pittsburgh, Wheeling and other Ohio River points are planning to organize a corporation with a capital of \$500,000 to build boats which will ply between Pittsburgh and Cincinnati, and only recently a meeting was held in Huntington, W. Va., at which the initial steps were taken by officers of commercial bodies of Parkersburg, Huntington, Cincinnati and other river cities to finance a transportation company to operate a line between Parkersburg and Cincinnati.

Greater attention is to be given the mines along the Monongahela R.R. in the future than has heretofore been the case, according to a statement recently made by Floyd J. Patton, one of the district fuel administrators in West Virginia, the National Administration having urged that more attention be given to the district referred to so as to encourage mine production there. Recent reports from the mines located on the Monongahela indicate that the car supply is much improved, operators on the Scott's Run line, for instance, stating that they had received more than 60 per cent. of their quota. Even though the Monongahela R.R. has no cars of its own, coal operators are confident that if the Government is to require fuel orders to be placed at the point nearest at hand, then the Government will require the Monongahela to furnish a sufficient number of cars to meet requirements.

Some of the more pessimistically inclined coal men in the southern part of West Virginia paint a rather gloomy picture of the outlook for production in the southern part of the state during the present year, and even go so far as to predict that the coal production in the Pocahontas and Tug River bituminous fields will fall short six million tons of last year's output, predicating their forecast on the fact that for the week of Mar. 9, about 180,000 tons were "lost," as they term it, through a shortage of cars and scarcity of labor. They also contend that the decline has been steady since last July and that there is therefore little probability of any increase in tonnage. Other coal men in the same section find encouragement in the fact that twenty large locomotives are to be put into service on the Norfolk & Western, having been sent to that road from a Western road to be used in furnishing power for additional coal trains. It is also argued that under the new system of shipments there will be much improvement in transportation facilities and that unless unusual conditions arise there will be a marked improvement in the movement of coal to market.

Fairmont, W. Va.

Senator C. W. Watson, head of the Consolidation Coal Co., is believed to be a candidate for the Democratic nomination for the United States Senate. Although he has been quoted as saying that there was too much work connected with the position for a business man, he is believed to have changed his ideas and that his candidacy will be announced formally in the very near future. Senator Watson has recently applied for a commission in the Ordnance Department of the Government. Former Senator Davis Elkins, also a coal man, is a candidate for the Republican

nomination for the United States Senate. He served in that position for a short time following the death of his father, being appointed by the governor.

The Consolidation Coal Co. recently completed a coal storage bin at its Owings mine, near Fairmont, which is of frame construction, placed on a concrete foundation, and has a capacity of approximately 1800 tons of run-of-mine coal. The size of the bin is 35 x 100 ft. It is constructed of longleaf yellow pine thoroughly treated with K.R. wood preservative, and extends over two railroad tracks, making it possible to load four railroad cars simultaneously. The coal is dumped over the tipples in the usual way, going from the chutes into a conveyor by which it is carried to the top of the bin and deposited where desired by gates which can be opened or closed. The machinery employed is electrically driven.

PENNSYLVANIA

Anthracite

Scranton—Former Senator E. F. Blewitt, a local mining engineer, has asked the Scranton Board of Trade to take up the matter of having 16,000 or more mine workers who were taken from the anthracite field to serve in the Italian army returned to work in this region. According to Mr. Blewitt the mines in the hard-coal field can increase production from 60,000 to 70,000 tons a day, if the former number of mine workers can be obtained.

Tower City—The Philadelphia & Reading Coal and Iron Co. has announced its intention to build at once a new town on top of Broad Mountain. Fifty houses will be erected and will be models of miners' houses in every respect, containing good water, electric light and all sanitary accessories. Vocational training for children will be provided.

Port Bowley—No. 14 colliery of the Pennsylvania Coal Co., on Mar. 23 dumped 2335 mine cars in nine hours. The men requested Superintendent Edgar Weichel to have a big day, so that they could show their patriotism by producing extra coal. The normal run of the colliery is 1100 mine cars per day, and the increase to 2335 cars shows the feeling of the men. The result meant that 7677 tons of coal were shipped from the breaker.

Lost Creek—The State Compensation Board has ordered a rehearing in the claim of Frank Lokus against the Harleigh-Brookwood Coal Co., in which compensation was asked because the claimant and a companion were caught in a rush of coal and imprisoned for 36 hours. The board said he was undoubtedly injured to some extent, but that it is not satisfied that the medical testimony sustains the findings of the referee. The case is the first of the kind to come before the board.

Plymouth—One double and four single frame dwellings at Carver St. were materially damaged on Mar. 20 by a settling of the surface. The cave extended as far as the Delaware & Hudson Co. coal tracks, making it impossible for the company to transfer cars of coal by this route. This same section was visited by a similar cave several months ago.

Pittston Junction—As a result of the activity of the fuel administration there will be little immediate mining of coal by the White Coal Co., where operations in the Checker vein have been followed by extensive surface subsidence. For shipping clean coal the White Company, it is stated, will be denied any more cars, according to orders issued to the Lehigh Valley Coal Co. by the district coal administrator.

Pittston—At the direction of County Fuel Administrator A. C. Campbell, the shipping of culm from two culm banks in Dupont borough and coal from a slope in Pittston township has been stopped under the regulations requiring that run-of-mine coal cannot be sold on the market.

Bituminous

Uniontown—J. H. Hillman, Jr., of Pittsburgh, has purchased the Fuller coal tract of Coal and Redstone townships for \$468,000, it was learned here. The tract includes 260 acres and was purchased at a price of \$18,000 an acre. It was purchased directly

from R. M. Fry and Homer Birchall, who held options on it.

Ebensburg—Three flat cars, brought into Revloc, the new mining town two miles from here, over the Coal and Iron R.R., were loaded and shipped on Mar. 19, making the first real shipment of coal by rail to be sent out from the new mines. There are two large shafts at Revloc, which will have a capacity of about 3000 tons a day when the mines are in full working order.

ALABAMA

Cullman—The Cullman Coal Co., recently incorporated, has filed in the office of the probate judge a deed from the Parker Bank and Trust Co. as the receiver of the Cullman Coal and Coke Co., conveying the fee simple right and the mineral and surface rights to 17,000 acres of coal lands, also the right-of-way and line of railroad of the Cullman Coal and Coke Co., extending from a point of connection with the South and North Alabama Railroad Co. at Cullman, to Bremen, a distance of some 20 miles. It is understood that the intention of the Cullman Coal company is to begin at once the development of the coal fields at Bremen.

VIRGINIA

Elkhorn City—A group of Huntington business men has acquired a tract of 462 acres of Elkhorn coal land on the Russell Creek fork of the Big Sandy River near here, and arrangements are being made to develop it on an extensive scale. Operations will begin immediately and it is expected to ship coal by July 1. A capacity of 1000 tons a day is planned.

WEST VIRGINIA

Caperton—Owing to a slide at its plant which carried the sidetracks away, in addition to about 200 ft. of the incline, the Sewell Smokeless Coal Co. has had to suspend operations for several weeks.

Weston—A mining machine is being installed at the plant of the Stone Coal Co., near here.

Clarksburg—Offices have been opened here by the Madigan Coal Co., of Connellsville, Penn., which recently began stripping coal at Meadowbrook with a steam shovel.

Shelmore—The Wolf Den Coal Co. is building 300 new miners' houses.

Austed—The Mill Creek Colliery Co. has found it necessary to suspend operations from 20 to 30 days, recent floods having washed away the power house, tramway and siding at the plant.

Fairmont—Two 3½-ton trucks with steel bodies and automatic dumps have been purchased by the Sines Coal Co. in order to haul the coal from its mines at Tammond, near Grafton.

Dodson—Extensive improvements are being made by the Garrett County Coal and Mining Co. at its tipple here.

Kingwood—The Kingwood mine of the West Virginia Coal Co. has been sold to a Greensburg, Penn., syndicate. The sale includes about 250 acres of coal land and a working mine with a capacity of 300 tons daily. The mine will be operated by the Inland Fuel Co., with headquarters at Greensburg, Penn. However, 750 acres of land are retained by the West Virginia company which plans to expend about \$75,000 in driving a 60-ft. shaft and in building a power plant.

Downs—The new Rachel mine at Downs, W. Va., will be electrically equipped throughout. A 700-hp. electric engine for the coal shaft and a 350-hp. electric engine for the supply shaft are on the way. Three Sullivan shortwall machines were installed last week. Six punchers will be installed this week.

KENTUCKY

Hopkinsville—The Memphis Coal and Mining Co., a subsidiary of the Memphis Gas and Electric Co., a heat, light and power company similar to the Kentucky Utilities Co., last season started purchasing coal lands near Mannington, Ky., to supply the necessary fuel for the company's operations. The company has recently purchased about 1600 acres of additional coal land at Mannington, where the company now has three mine openings and is starting a fourth. About \$40,000 will be spent on a tipple, of all-steel construction, while the coal from the various openings will all come to this tipple by trams. It is planned to erect large storage arrangements, so that the mines may operate steadily even when transportation facilities are at a low ebb. It is planned to expend about \$200,000 in all for land and improvements at this plant.

Madisonville—The Linton Colliery Coal Co. has started work on opening a new mine at Moorman, Ky., the shaft to be only

22 ft. deep. When in operation it is claimed the mine will have a daily capacity of 2500 tons. The coal mined will be shipped out over the Madisonville, Hartford & Eastern and the Owensboro & Nashville R.R., two small feeders.

Louisville—G. M. Matthews, who for the past year has been with the J. B. Allen engineering office at Hazard, Ky., has been made general manager of the Amburgy Coal Co., recently organized by Louisville capitalists, and will shortly take up his headquarters with the company's Louisville office. The new coal company has started work on developing properties on Smoot Creek, in Letcher County, where a branch of the Louisville & Nashville is being brought in. A tippie-height seam is being developed.

Hellier—It is reported that the Elkhorn Consolidated Coal and Coke Co., of Syracuse, N. Y., will expend several hundred thousand dollars in the development of a large tract of coking coal lands which this corporation has purchased in the Marrowbone Creek section, near here.

Madisonville—The Linton Colliery Coal Co. will soon begin to sink a shaft at the new mine to be opened 2½ miles from Moorman, in Muhlenberg County. When the mine is ready for operation it will have a daily capacity of 2500 tons. The shaft will be 22 ft. deep and the coal mined will be shipped over the Madisonville, Hartford & Eastern R.R. and the Owensboro & Nashville Railroad.

Greenville—The W. G. Duncan Coal Co. has broken ground for its new central power plant to be erected at Graham, Ky. Contracts have been let for the equipment, which consists of turbo-generators, boilers, stokers and auxiliaries. The building will be of steel and brick construction. Charles M. Means, of Pittsburgh, is the consulting engineer.

INDIANA

Terre Haute—A meeting of operators whose mines are served by the Chicago, Terre Haute & Southwestern R.R. was called for Mar. 26 by President Will J. Freeman of the Indiana Bituminous Coal Operators' Association. Plans were laid to send a commission to Washington to confer with Secretary McAdoo about the scarcity of cars on that road and to demand that cars be furnished. There are thirty-one mines located on that railroad, which is almost entirely a coal road, and during the last fortnight many of the mines have been idle because cars were not available.

ILLINOIS

Tamaroa—George W. Dowell has disposed of his holdings in the Paradise and Franklin County Coal Co., of which he was president, to the Northern States Coal and Mining Co., of Chicago. The mine, which is near here, is in the heart of a field that is just being developed. Dowell will devote his attention to other mining interests in southern Illinois.

Bellefonte—Bellefonte miners are making plans to erect a labor temple at an estimated cost of about \$60,000. The proposition is to be acted on by the locals and then submitted by a referendum vote to the membership.

Carbondale—News has been received here of the death at Brunswick, N. J., of Mrs. J. D. Peters, who with her husband was interested in southern Illinois mining properties, in Williamson County. Peters died a few weeks ago in New York.

Kewanee—A cave-in at the mine of the Grice Coal Co. here has left the mine in such bad shape that it can hardly be reopened. It is not thought that the expense of putting it in shape would be justified, inasmuch as there is not more than another year's mining supply in the company's holdings.

A 4½ ft. seam of coal at a depth of 140 ft. was struck by the force of the Bradford Mining Co. on the farm of Andrew Tychon, 2½ miles west of the village of Bradford. A deposit of quicksand made the opening of a second shaft necessary after operations had been carried on to within a few feet of the coal deposit. Coal will be mined within the next two months.

Springfield—The charge of disloyalty against Severino Oberdan, of Nokomis, who was tarred and feathered by "loyalist" miners at Staunton, Ill., recently, has been dismissed in the Federal Court by direction of the United States Department of Justice.

Murphysboro—Twenty-five sticks of dynamite were found in an airshaft of the Shoal Creek mine, 12 miles from this city. The failure of a percussion cap to discharge prevented an explosion. It is believed that an attempt was made to blow up the mine.

Christopher—The Christopher mine was reopened Mar. 25. The mine has been closed since November, when an explosion occurred which wrecked the mine and caused the death of a number of miners. It is one of the largest in the state and employs 700 men when running at capacity.

Carlville—Mulville Bros., who have the contracts for putting in a line of railroad from Anderson, on the Chicago & Alton Ry., to the Standard Oil Co.'s mine site at Schoper, have a large force of men at work and have completed over 2000 feet of new road, graded with track laid. They expect to have the bridges built and all work on the line completed by July 1. The railroad will be used to convey workmen from Carlville to the new mines when they are opened up for work.

Athens—Mine No. 2 will be reopened.

Morris—The Mitchell mine, which was closed for repairs ordered by the State Department of Mines and Minerals, has been reopened.

Edinburg—The mine here has been closed down indefinitely on account of its dangerous condition.

Mount Vernon—The Brennan drill, operating in the southern part of Jefferson County, has struck two seams of the highest class of coal. In Prairie township, section 36, a seam 6 ft. 7 in. wide has been struck. This coal is of superior quality and is free from foreign matter. Another core drawn from another hole showed even better results. The coal is located only 600 ft. below the surface.

Herrin—The Watson Coal Co. has been incorporated here by W. A. Perrin, of this place. J. E. Allen, A. G. F. A. of the Cotton Belt Ry., at St. Louis, and G. W. Allen, of St. Louis. They took over the property of the Carbon Coal Co. and contemplate sinking a new slope mine between here and Marion. They also succeed in St. Louis the Allen Coal Co., which is liquidated and retired.

OHIO

Steubenville—Work will soon be started on the erection of a new coal tipple at the Henry Walker mine in Tiltonville. The old tipple, which has been in use for the past several years, is too far worn to carry the heavy cars of coal down the incline and has become weakened by several years of steady use. The new tipple will be finished within a month.

MISSOURI

Martinsville—The first coal taken from the new mine developed by the Chamber of Commerce of this town has been brought to the surface and sold. The project, it is said, will save the average local consumer 7c. on each bushel of coal used.

NORTH DAKOTA

Dickinson—Official announcement has been made that the Federal Fuel Co. has taken over the Lehigh mines and will erect a 24-unit briquetting plant, starting with a two-unit machine and gradually adding the other units. A \$2,000,000 plant is the eventual aim of the company. The capacity of the complete plant will be 864 tons every 24 hours. Among the members of the Federal Fuel Co. are Judge Frank McNulty and J. W. Martin, both of Aberdeen, and J. C. Thompson, of Fargo.

Personals

J. E. Virgin, for the past seven years general mine foreman for the E. E. White Coal Co., at Statesbury, W. Va., has resigned his position to take charge of No. 6 mine of the Raleigh Coal and Coke Co., at Raleigh, West Virginia.

Thomas Duffy, of McAdoo, first president of the United Mine Workers of the seventh anthracite district, forsook the mines on Mar. 19 and took a job at the Jeanesville Iron Works, a local munition plant. Duffy was in office when the 1900 strike took place and was for years a confidential lieutenant of John Mitchell, head of the international union.

Obituary

D. C. Tiffany, aged 62 years, superintendent for the Lehigh & Wilkes-Barre Coal Co., in the Ashley district, died at his home in Ashley on Mar. 19, after less than 24 hours illness of pneumonia. Mr. Tiffany had been in the employ of the Lehigh company for 48 years, most of the time in an official capacity.

Foreign News

Clover Bar, Alta.—The mine of the Edmonton Collieries, Ltd., on which work was begun last summer, has made its initial shipment, one car going to Manitoba and one to Saskatchewan, and is now in a condition to supply all orders. It has an up-to-date coal-handling plant. L. C. Stevens is president and H. C. Anderson secretary-treasurer of the company.

Nanaimo, B. C.—An attempt was made on Mar. 23 to reopen the Jingle Pot mine, which was sealed up some three months ago on account of an outbreak of fire. It was found, however, on breaking through the first stoping that a large quantity of water had gathered in the stope, and further progress was barred. Pumps will be started immediately, but it is estimated that it will take three weeks to pump the water out. Apart from the water, all the other conditions are favorable, and Manager Freeman is hopeful that as soon as the water is pumped out he will be able to resume operations.

Montreal, Can.—Mark Workman, president of the Dominion Coal Co., speaking in reference to a statement by Hon. W. Armstrong, Minister of Mines for Nova Scotia, to the effect that the St. Lawrence market for coal might be permanently lost to Nova Scotia operators, said that the Dominion Coal Co. would have little difficulty in starting in where they left off in the St. Lawrence market just as soon as the required tonnage was available. He believed that the St. Lawrence trade of the Cape Breton mines would grow to greater proportions than ever after the war, as their coal was so much better than the American coal for steam purposes that manufacturers were willing to pay more for it.

Industrial News

Erie, Penn.—Harry Hamilton, said to be the first coal dealer arrested on a charge of profiteering in that commodity, was fined \$500 in the United States district court of this city.

Pittsburgh, Penn.—The Duquesne Electric and Manufacturing Co., Bessemer Building, dealers in new and used electrical and power-plant equipment, announces the opening of a branch office at 230 So. LaSalle St., Chicago.

Philadelphia, Penn.—The Supreme Court on Mar. 21 dismissed appeals taken by coal companies in Lackawanna County from the action of the court there in fixing the value of coal for assessment purposes at \$300 a foot-acre. The decision to dismiss was based on a per curiam made Mar. 23, 1917.

Scarbro, W. Va.—The Plum Eagle Coal Co. will mine the Eagle seam, which is a byproduct coal. An incline or rope conveyor about 600 ft. long will be built. The equipment includes twenty 11-ton mine cars, one 6 to 8 ton steam locomotive and six 8 to 10 ton two-way dump cars. About \$30,000 will be invested in the plant. J. M. Randich is superintendent.

Maysville, Ky.—The coal docks of the Chesapeake & Ohio Railroad Co., built at this point nine years ago at a cost of \$30,000, were burned along with 500 tons of coal on Mar. 18, fire having started in the boiler room in lighting a torch close to an oil tank. Practically the entire plant was consumed, the loss being estimated at \$55,000.

Charleston, W. Va.—Despite unusual handicaps, the February report of coal and coke loadings on the Chesapeake & Ohio reveal a large increase over the same month of the previous year and an improvement over the first month of this year. The total loadings for February were 2,250,305 tons as against 1,921,685 tons for February, 1917. In January of the present year the tonnage loaded was 1,690,680.

Pittsburgh, Penn.—Directors of the Pittsburgh Coal Co. of Pennsylvania have declared dividends of \$1.50 a share on the preferred stock and \$5 a share on the common stock. The common dividend is payable in quarterly installments of \$1.25 a share beginning Apr. 25, 1918. Directors of the Pittsburgh Coal Co. of New Jersey declared a dividend of \$1.25 a share on the preferred stock.

Columbus, Ohio.—Engineers from the Norfolk & Western R. R. have made extensive surveys over the 250-acre tract purchased southeast of Columbus several years ago, which will be improved by

building a large yard for the assembling and collection of coal cargoes from West Virginia and southern Ohio. The Norfolk & Western connects at Columbus with the Hocking Valley, which carries lake shipments to Toledo.

Erie, Penn.—Action of coal operators in the western Pennsylvania district of the United States Court, demanding the return of their books and papers seized by Federal agents when the "profiteering" charges were made, will not handicap the grand jury to any great extent, Government authorities say. Officials of the seven concerns under charges have been subpoenaed and they will be compelled to submit whatever books are needed.

Cincinnati, Ohio.—Plans for the convention of the Michigan-Ohio-Indiana Coal Dealers' Association, to be held here Apr. 15, include an address by J. A. D. Morrow, director in charge of coal distribution with the United States Fuel Administration. R. A. Colter, president of the Cincinnati Coal Exchange, states that full information will be given to the dealers regarding the Fuel Administration's program, and its orders will be made plain. A two-day convention will be held.

Nashville, Tenn.—The Dayton Coal, Iron & Railroad Co., of Wilmington, Del., capital \$5,000,000, has filed articles in Tennessee, with plans to establish headquarters at Chattanooga, and plans to take over the equipment, etc., of the Dayton Coal and Iron Co., which was in the Chattanooga bankruptcy courts last August, the assets being purchased by H. S. Matthews, of Rome, Ga. The company has large holdings in the Dayton (Tenn.) district, and it is planned to start operations again.

Louisville, Ky.—The value of moving-picture theaters as an aid in holding miners in isolated districts is generally recognized by large coal-mining companies, many of which operate their own picture theaters, commissary stores, etc. A recent advertisement of the Climax Coal Co., of Shamrock, Ky., asking for miners to go to Edgewood, Ky., near Middlesboro, called attention to the following requisites: "An excellent camp, good schools, picture show and other amusements." Full time was also offered.

Fairmont, W. Va.—A new organization of West Virginia Coal Operators, to be known as the West Virginia Mining Association, is to be formed, and C. H. Janinis, president of the Central West Virginia Coal Operators' Association, has circularized the leading operators of the state asking their cooperation in the move. It is planned to make the new state organization a branch of the American Mining Congress, 50 West Virginia operators now being members of the Congress. A meeting to organize will be held soon, probably at Washington.

Charleston, W. Va.—Two sets of appraisers have been appointed by State Tax Commissioner Walter S. Hallanan to pass on the value of approximately 5000 acres of coal land in Harrison and Raleigh Counties, belonging to the estate of the late Nathaniel Ewing, of Uniontown, Penn. The appraisements are to be made for the purpose of levying an inheritance tax. The Board of Appraisers for the Harrison County holdings consists of James N. Hess, Howard Robinson and C. J. Ryan; and for Raleigh County, J. Q. Hutchinson, C. L. Heaberlin and W. O. McGinnis.

Sullivan, Ind.—Foreclosure of a mortgage against the Consolidated Indiana Coal Co. as to its ownership and rights on 4500 acres of coal land in Sullivan County has been asked for in a suit filed in the Federal District Court at Indianapolis by the Guaranty Trust Company of New York, trustee under a mortgage securing a bond issue of \$2,773,000. The coal company was placed in a receivership in the Federal Court in Illinois in 1915. Stewart K. Smith, of Chicago, was appointed receiver of the company, which owned coal property in Illinois and Iowa as well as in Indiana.

Cincinnati, Ohio.—The Union Gas and Electric Co. has issued an announcement to its industrial customers that during the coming summer there will be no gas furnished manufacturing plants at the former industrial rates, all gas consumed being charged for at domestic rates. This, it is estimated, will result in consumption by industrial concerns being reduced by three-fourths, and will mean a correspondingly greater use of coal. Formerly summer rates to industrial consumers were extremely low, and made it possible for them to use gas at a considerable saving over the cost of coal.

Frankfort, Ky.—Suit has been filed by the Carterville Washed Coal Co. against the Kentucky Jewel Coal Co., before Charles N. Wiard, clerk of the United States District Court, Frankfort, similar to the R. A. Brawer suit against the Clear Creek Coal Co., which was recently before the court. The petition of the Carterville people alleges that defendant entered a contract on Apr. 25, 1916, to furnish plaintiff 500 cars of block coal and 700 cars of egg coal at prices ranging from \$1.35 per ton to \$1.80; that 227 cars were delivered and 373 cars were not, and asking for judgment of \$23,872 with interest from April, 1917. Humphrey, Middleton & Humphrey, of Louisville, filed the suit.

Columbus, Ohio.—The Ore and Coal Exchange, which takes the place of the Lake Shippers' Pool Association of last year, was organized recently at Cleveland by a meeting of coal operators, ore shippers and vessel men. The organization will be under governmental regulation and will have absolute charge of all lake shipments from the lower lake ports during the season of 1918. The association was formed by the naming of the following executive committeemen: A. A. Augustus, chairman; George E. Cameron, Edward A. Uhrig, representing upper dock interests; W. M. Collins, R. S. McVeigh, Horace Robbins, C. C. Maurer and J. P. Walsh. Mr. Walsh represents Pennsylvania and eastern Ohio interests on the committee. The executive committee will be called together soon for the selection of a director and assistants. Headquarters will be located at Cleveland.

Dallas, Tex.—At the suggestion of Wiley Blair of Dallas, Federal Fuel Administrator for Texas, the Federal Fuel Administration has authorized a graduated scale of reductions for consumers of coal in Texas who make purchases during the summer months when there is better transportation and coal can be transported to cities and towns where needed. The present price of Colorado bituminous coal at the mine on prepared sizes is \$4.45 a ton, and on Oklahoma coal \$5 a ton. The reductions authorized to Texas dealers are as follows: On April shipments, 75c. per ton; on May shipments, 60c. per ton; on June shipments, 45c. per ton; on July shipments, 30c. per ton; on August shipments, 15c. per ton. September shipments will be made at present prices. All reductions are effective Apr. 1 and will make the price of Colorado coal to dealers \$3.70 a ton and on Oklahoma coal \$4.25 a ton.

St. Louis, Mo.—The American Coke and Chemical Co., of Chicago, has purchased for its subsidiary, the St. Louis Coke and Chemical Co., a 300-acre tract just outside the city limits of Granite City, in the St. Louis industrial district. The purchase price is said to have been approximately \$200,000. Operations will begin at once on the erection of a Roberts byproduct coke-oven plant and two blast furnaces, at a cost of about \$5,000,000. East St. Louis sites were under consideration, but the Granite City site was found to be more desirable. The plant will be devoted exclusively to the production of high-grade metallurgical and domestic coke and byproducts from Illinois bituminous coal. It is expected that the plant, with its utilization of Illinois coal for this purpose, will have a tendency to make the Mississippi Valley the center of steel manufacture, on account of the proximity of the coal fields. The company also expects to supply coke to St. Louis consumers at a price little in excess of what bituminous coal costs.

New York, N. Y.—The financial statement for 1917 of the Elk Horn Coal Corporation gives the corporation's assets as \$27,445,390, of which \$20,747,334 is real estate and buildings, and \$4,317,812 stocks of other companies, the balance being current assets in money, coal on hand, etc. The income account for the year follows: Earnings from all sources, \$4,497,120.72; operating expenses, taxes, insurance and royalties (exclusive of income and excess profits taxes), \$1,972,936.81; depreciation, \$168,902.66; depletion, \$109,492.37; net earnings from operations, \$2,245,788.88; interest on funded debt, \$414,630.98; net earnings for the year (before deducting income and excess profits taxes), \$1,831,157.90; less reserve for income and excess profits taxes, \$107,959.52; net surplus for the year, \$1,723,198.38; less dividends declared and paid on preferred capital stock during 1917, \$393,363; net surplus for the year 1917 carried to profit and loss, \$1,329,835.38; profit and loss account, Dec. 31, 1916, \$313,257.92; total, \$1,643,093.30; less adjustment of accounts of previous years, \$217,854.69; profit and loss account, Dec. 31, 1917, \$1,425,238.61.

MARKET DEPARTMENT

Weekly Review

Zoning Plan Announced—Car Supply Not Only Limits Production but Creates Labor Unrest—Demand for Steam Coal Unabated—Domestic Inquiry Light—Some Contracting Reported

THE long-awaited zoning plan has at last been announced by the Fuel Administration, as have also new price rulings in a few producing districts. No one can foretell with any degree of assurance just what will be the results of the new zoning policy, which goes into effect Apr. 1, as the scheme virtually amounts to a reorganization of the entire soft-coal industry. The country has been divided into a number of producing zones within which consumption will largely be confined. In this way thousands of miles of long cross-hauls will be eliminated, thus making for an increase in car utility. A reduction in anthracite shipments to the West and Northwest has also been announced by the Fuel Administration.

Transportation facilities are still bad, the sidings in and around many collieries being congested with loaded coal cars. Considering the urgent need existing for coal, the situation cannot but be viewed with alarm. Bituminous

has suffered a large falling off in production, many mines being compelled to shut down because of insufficient empty cars to load. It is stated that in two West Virginia fields alone, during the 17 working days ending Feb. 25, an average of more than 10,000 men were idle every day. During March there was little improvement. If this condition is not remedied soon it will be exceedingly difficult for the operators to preserve intact their working organizations, as the mine workers, notably in the central Pennsylvania region, are dissatisfied with working only two or three days a week and threaten to leave the mines for more certain employment. The running time at the mines should be equalized, and this can only be brought about by the abolition of the pernicious "assigned car" policy of the railroads with its unequal apportionment of cars and inadequate distribution of tonnage.

The heavy requirements for steam coal preclude any let-up in the demand.

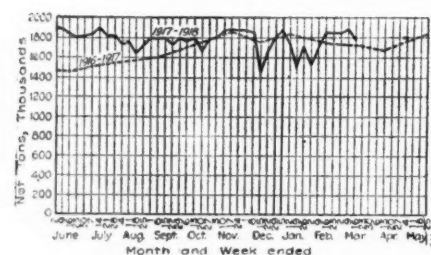
Shippers have not been in position to guarantee plenty of coal, and buyers have been ready to purchase every ton available. Here and there coal is still being confiscated by the fuel authorities for the use of public utilities which do not seem able to get an adequate supply from their regular sources.

Retail dealers report many orders for next winter's requirements, and these are being accepted subject to regulations and prices at the time of delivery. Some contracting is reported for the new coal year, though uncertainty on the part of jobbers as to where their supply is to come from serves as a deterrent to the closing of contracts.

So that the consumer will not be forced to hunt for a licensed jobber through whom to obtain coal, the Fuel Administration has stated that jobbers who have made application for licenses prior to Apr. 1, but who have not received their licenses on that date, will be allowed to do business as usual.

COAL PRODUCTION

Bituminous production declined 579,000 tons during the week ended Mar. 16. The total production of soft coal (including lignite and coal made into coke) is estimated on the basis of railway shipments at 10,686,000 net tons. The rate of production per working day was 1,781,000 tons as compared with 1,878,000 tons during the preceding week. For the first time in five weeks the production per working day has fallen below 1,800,000. It is still, however, considerably in excess of 1,729,000 tons, the average during March, 1917. Preliminary estimates place the week's production of beehive coke at 644,000 net tons, or 107,000 tons per working day. The production in the Connellsville and Lower Connellsville districts, as reported by the "Courier," increased from 314,409 tons during the week of Mar. 9 to 335,122 tons. Shipments of anthracite also increased slightly, from 41,807 to 42,265 cars.



For the country as a whole almost no change occurred during the week ended Mar. 9. The ratio of production to full-time capacity was 70.6 per cent., as compared with 70.7 per cent. during the preceding week. Fluctuations in output were reported in certain localities, but in general operating conditions have been singularly constant for the last two weeks.

The most favorable operating conditions

are reported by the South, Southwest, Far West, and Rocky Mountain States. In the Middle West the output at present ranges from 70 to 75 per cent. of full-time capacity. It is in the great producing districts of Pennsylvania and West Virginia that car shortage continues most acute. In only three districts in those states has the output exceeded 70 per cent. of capacity during the last two weeks.

In the beehive coke industry the 65 operators reporting produced 296,030 net tons of coke during the week ended Mar. 16. The ratio of production to capacity, as reported by the railroads, increased from 60.8 per cent. during the preceding week to

CARLOADS OF COAL AND COKE ORIGINATING ON PRINCIPAL COAL-CARRYING ROADS

Week Ended:

	Feb. 23	Mar. 2	Mar. 9	Mar. 16
Bituminous shipments, 121 roads..	189,691	197,415	200,239*	188,631†
Anthracite shipments, 9 roads...	36,612	39,875	41,807*	42,265†
Beehive coke shipments, 4 roads...	11,634	12,911	13,032*	13,218†

* Revised from last report. † Subject to revision.

64.1 per cent. The improvement was made possible by a better supply of cars. Losses due to shortage of coke cars fell from 27.4 to 23.8 per cent. of capacity. Losses of output attributed to shortage of labor remained constant. The same operators shipped 161,350 tons of coal, or 37.3 per cent. of their capacity as shippers of coal.

The high standard of performance reported from byproduct operators last week was equaled and even exceeded during the week ended Mar. 16. The ratio of production to maximum capacity rose from 86.4 per cent. during the preceding week to 87.7 per cent.

Out of the 12.3 per cent. of maximum capacity which the byproduct plants of the country failed to realize in actual output, 6.5 per cent. was lost through lack of coal; 0.2 per cent. because of labor trouble;

3.3 per cent. on account of repairs to plants, and 2.3 per cent. for all other causes.

Operating conditions in the several states varied but little from the performance of the week before. Kentucky was the only state to record a material decrease. The great improvement in byproduct operation during the last two weeks is evidenced by the fact that the state reporting the least favorable conditions—New Jersey—is now operating at over 75 per cent. of capacity.

BUSINESS OPINIONS

Bradstreet's—The two great salient features of the week are the large number of reports of insufficient stocks in hands of jobbers, final distributors and manufacturers and the advice that despite improvement noted at a few centers where grain movement has been and is large, the country's railroads and railroad terminals are still congested and that the opening of water routes is longed for to lift some of the burdens of superabundant traffic. That governmental buying dominates everything is hardly worth repeating.

R. G. Dun—Movements in business have continued mainly in the right direction, with steady acceleration of manufacturing and distribution and a quickening of retail demands under favoring weather conditions. The development of Spring trade, while limited by the various war restrictions and the economies of the period, is satisfactory in many instances, and financial obligations are met more promptly as shipments go forward to points of destination with less general interruption.

American Wool and Cotton Reporter—Considerable South American wool not subject to Government control has been sold during the week under review. Much more wool is now in demand for civilian purposes. Medium and fine grades of territory wools have been in large demand. The cotton situation is very mixed. Many look for higher prices. One man states that it

will reach 50c. per pound. The labor situation is a difficult one. The woolen goods market is exceedingly inactive, as the heavy weight selling season is largely over. The situation appears reasonably satisfactory to both buyers and sellers.

Dry Goods Economist—This week saw spot transactions in cotton on the New York Exchange at 34.30c. and contracts for March delivery at 33.65c., with sales for later months up to January, 1919, at various prices, the low-st being 30.44c. No such quotations have previously obtained for any substantial quantities of cotton in the history of the United States. Speed in the movement of goods from factories to stores is increasing so slowly that conditions are still far from satisfactory. In many cases goods continue to reach their destination, though far behind time. As has been the case since the first of the year, or earlier, the reliance of buyers is still on the parcel post and on the express companies.

Marshall Field & Co.—The current wholesale distribution of dry goods is greatly ahead of the corresponding period a year ago. The volume of road sales for both immediate and future deliveries shows a large gain over the same week in 1917. Customers have been into market in greater numbers. The market on domestic cotton continues strong. Collections are good.

The Iron Age—The President announced on Tuesday that the agreed prices on iron and steel products would be continued for three months beyond Mar. 31, except that basic pig iron and heavy melting steel scrap would be reduced \$1 in April. This means that a maximum price of \$32 at furnace for basic iron, \$35.20 for bessemer iron, or a reduction of \$1.10 a ton, and \$29 instead of \$30 for heavy melting scrap. The Government's car and locomotive orders, on which the reasons for delay have been inscrutable, are expected any day. First expectations must be revised, and if the total of car contracts distributed from time to time in the next few months proves to be but 50,000, the year's plate requirements on car and locomotives account may be 1,000,000 tons less than early estimates.

Atlantic Seaboard

BOSTON

Situation grows complicated. "Emergency" receipts light, and increased movement on contract coal not enough to give industries the reserve they want. Railroads and utilities operating on narrow margins, especially the larger ones, although New Haven Road is now in comfortable shape. J. J. Storrow's speech at Springfield makes a deep impression. Much hard work being put in for better supply of tonnage to bring New England's coal. Rail movement averages well. Still great perplexity over season after Apr. 1. Premium coal rumored. "Zoning" plan on paper throws an increase in volume toward Hampton Roads. It means a further access of regulation. Disparity in price between Pocahontas and New River. At piers a surplus of coal over bottoms. Anthracite water movement dependent upon number of tugs available. Outlook for more power is dubious.

Bituminous—A lean period was predicted for Mar. 15 and it looks as if the time had arrived. Receipts here are dependent now almost exclusively on steamers, and it happens that they are so placed at this writing that arrivals are not keeping up with coal consumption. Relatively few bottoms were at the Virginia terminals last week, and the Boston & Maine R.R., for instance, has been obliged to land heavily on what cargoes were discharging. The result is that a number of plants relying upon shipments that they were listed to receive are going to be without fuel unless some other source yields relief. Many large factories that were comfortably supplied during the season thus far are now exhausting their reserves and are finding to their surprise that prompt deliveries are not forthcoming.

The fuel administration for the present is taking less coal from the Shipping Board and other Government pools at Hampton Roads and is suggesting to the regular coal agencies that the latter furnish their own coal for such steamers as are in the service of the New England fuel administrator. Practically all the shippers have plenty of coal to their credit in the Tidewater Coal Exchange, so marked has been the shortage of bottoms, particularly among the factors who are less consistent shippers to this market but who at the same time account for a considerable tonnage.

The immediate situation falls hardest upon the largest users. The railroads and

big utilities like the Boston Elevated Ry. are running on a hand-to-mouth basis and most of the large textiles are in the same position. Buyers are getting apprehensive and in the absence of any program the anxiety is fast increasing. New England has been accustomed to stocking coal, has done it as a matter of necessity, and the inability to get more than a few days' supply at a time is causing real alarm. One large consumer in easy position at this time is the New Haven R.R. A week ago this situation was so obvious that the Fuel Administration at Washington ordered coal that was standing to the credit of the New Haven in the Tidewater Coal Exchange to be turned over at the piers for emergency use. This was mainly at the New York ports, where there is now relatively much less on hand than there are boats waiting.

J. J. Storrow's speech to the New England Coal Dealers Association at Springfield on Mar. 21 focused public attention on the state of coastwise shipping. It drew forth editorial comment and answered many of the criticisms that have been heaped upon the fuel authorities for not making adequate plans to deal with the problem.

The New England fuel administrator is making every effort at Washington to get consideration in the matter of ships. The work is incessant, else no bottoms are forthcoming. Something has been said about wooden ships under one of the early programs of the Emergency Fleet Corporation, but as carriers of any tonnage worth while there seems to be some question. It is said that for overseas traffic, after allowing for ship stores, bunker coal, and other supplies, a so-called 3000-ton ship would actually take about 1000 tons of coal across the Atlantic.

Effective Mar. 23, the authorized price on coal in the Pocahontas district is \$2.45 per net ton of 2000 lb. for run-of-mine. This makes a disparity of 60c. between New River and Pocahontas, two grades that have always been competitors in the same markets and until last fall were upon the same price basis. If price were any consideration this ruling would be certain to upset selling arrangements of long standing and would cause no end of confusion. As it is, buyers will gladly take either coal, provided they can get the bottoms to move it, and the mine operator in the more favored field will smilingly pocket his extra money.

A similar price adjustment has been ordered for part of the Pittsburgh field in Pennsylvania. The effect of these moves on the volume of coal produced remains to be seen. Operators will not be so likely to exert themselves getting labor, if the selling price is continued on a \$2.45 basis.

Rail movement through the gateways continues favorable. On the 25th nearly 1400 cars of coal came through all the transfer points, although Harlem River and Maybrook on the New Haven are still difficult. There is a marked shortage of locomotives, although improvement in this respect is promised within a few days. The total accumulation at both points on the same day was in excess of 3000 cars, all kinds of freight.

Buyers who return from certain of the bituminous regions report an utter inability to negotiate contracts for next season. No program with regard to priorities or "assigned cars" has yet been announced, and the perplexity of New England consumers is something large. Meanwhile there are very definite rumors that liberal premiums are being exacted.

Anthracite—The great anxiety of retailers along the coast is over the prospect for tugs to move barges. Our company alone is reported to have had 24 loaded barges in the Delaware River at one time awaiting power, and only three tugs en route. The prospect for more tugs cannot be said to be hopeful.

NEW YORK

Complaints made of lack of anthracite domestic sizes. Situation serious and shipments are slow. Retail dealers receive plan of distribution. Retail prices may be reduced 35c. Bituminous miners restless. Car supply poor and production is light.

Anthracite—Everywhere one hears complaints of the lack of supplies. The demand for coal continues unabated notwithstanding the discount of 30c. per ton at the mine which Dr. Garfield has announced goes into effect on Apr. 1. The heavy production at the mines has had no apparent effect on stocks at the loading docks here. On all sides is heard the plea for more coal, but receipts do not increase. No one seems to have any surplus to sell to the spot buyer, and the retail dealers who have their usual source of supply are among those who complain. At the wholesale of-

fices it is stated that the usual shipments are being made, but that the demand is unusually heavy for this time of the year.

The mines are working steadily and almost every conceivable kind of a car is being filled with coal, but there are days when cars are not to be had and the mines are idle.

The retail distribution plan for the year ending Mar. 31, 1919, was announced on Monday of this week by County Fuel Administrator Reeve Scoley after a conference with the retail dealers of Manhattan Borough. Dealers are to fill orders for consumers on their books during the previous year, but no order shall be filled until an order blank signed by the consumer shall be presented, the order shall then be given a serial number. The dealer may then make delivery in full when the order does not exceed six (6) tons. Should such order exceed in the aggregate six tons, no dealer shall deliver or cause to be delivered more than two-thirds of the amount of the necessary requirements for the year ending Mar. 31, 1919, until each customer who has placed an order and is willing to receive delivery has received two-thirds of his necessary requirements. Afterward the other one-third shall be delivered.

Dealers are required to file with the County Fuel Administrator a statement containing names and addresses of household consumers to whom aggregate delivery of more than 50 tons has been made, together with the amount of tonnages so delivered in the previous month, and a statement containing the names and addresses of apartment houses or consumers to whom an aggregate of more than 100 tons has been delivered for storage.

No coal shall be delivered for storage in areaways, backyards, vacant lots, etc., without the special permission of the Fuel Administrator, and no dealer shall deliver carload or bargeload lots to any domestic consumer or group of consumers without the permission of the United States Fuel Administrator. Any dealer or consumer who violates the regulations is subject to the penalties prescribed by the Lever Act, which imposes a penalty of \$5000 fine or two years' imprisonment, or both.

There has been no let up in buying in anticipation of the discount announced to become effective on Monday next. Shippers have not been in a position to guarantee plenty of coal and buyers have been ready to purchase every ton available.

Retail dealers report many orders for next winter's requirements on hand, all of which have been accepted subject to regulations and prices at the time of delivery.

The anthracite steam coal situation is easier. No announcement has come from Washington as to Government prices for these coals. Buckwheat No. 1 is hard to get, but rice and barley are easier, the latter particularly so because of the scarcity of bituminous with which it is mixed in many instances.

Current quotations, per gross tons, f.o.b., Tidewater, at the lower ports are as follows:

	Circular	Individual
Broken	\$6.30	\$7.05
Egg	6.20	6.95
Stove	6.45	7.20
Chestnut	6.55	7.30
Pea	5.05	5.80
Buckwheat	4.30@5.00	5.50@5.80
Rice	3.75@3.95	4.50@4.80
Barley	3.25@3.50	4.00@4.25
Boiler	3.50@3.75	

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous—Local conditions are anything but satisfactory. Supplies are short and there is little coal left for the spot buyer. Dealers generally are of the opinion that unless conditions change quickly the situation here will become serious. They also believe that a change for the better must come shortly or there will not be much chance of preventing a serious shortage of coal in this market next winter.

Conditions at the mines are serious. Car supply has been so bad that day after day the miners have been idle until now they are in many cases without money, some of them have been unable to earn more than enough to pay running expenses. They are now becoming discouraged and unless conditions improve quickly the operator believes many will seek other means of employment. Government reports show that for the week ended Mar. 16 bituminous production shows a decrease of 579,000 tons.

Dealers are more favorably impressed with the plan to license jobbers, and at the conclusion of the two days' sessions of the National Coal Jobbers Association held here

it was announced that the Association recognized the distinct advance which the Fuel Administration has made in deciding to license the jobbers, which plan the Association takes as evidence that the coal jobbers will be permitted to use their capital and organization to help solve the war problems.

The bunkering committee of the Wholesale Coal Trade Association of this city has issued a supplemental list of pools suitable for bunkering purposes, as follows: South Amboy, Nos. 9 and 10—Any good Greenburg coal or its equal: Port Reading, Nos. 9, 10, 22, 23, 31, 33, 34 and 36; B. R. & P., 12, 14 and 15; St. George, Nos. 22, 23, 31, 33, 34 and 36, and Port Liberty, Nos. 9, 10, 23; B. R. & P., 12, 14 and 15. The bunkering situation is steadily improving and there is very little delay now in coaling vessels.

PHILADELPHIA

Anthracite trade still extremely active. New rules for dealers. Cross margin again fixed at \$2.50. Cash discount eliminated. Steam prices now controlled. Short weights to stop. Distribution plans being worked out. Bituminous zoning plan announced. Development anxiously awaited. Modifications expected. Brokers almost idle. Traffic improves slowly. Priority orders objected to.

Anthracite—The month just closing has probably been the busiest March ever experienced by the trade. Ordinarily there is considerable easing off in business in anticipation of the April reduction, but this year the retailers have been busy straight through the month. As a matter of fact the householders have never really caught up on the shortage of last winter and the business now is created by the need of sufficient fuel to tide the people over the cool days of spring, and no anxiety is shown by them in the event that they will have a ton or two over for next year purchased at high prices. The receipts from the shipping companies have been fairly large, but not nearly so heavy as most dealers, especially the larger ones, would wish. Large tonnages continue to be sent to other markets by the operators and local dealers are wondering how long this will continue, as they are particularly anxious to start actively on their storage orders.

Aside from the business of selling coal the dealers have had a busy week familiarizing themselves with the rulings of the Federal Fuel Administration by which they are to be governed during the new coal year commencing Apr. 1. In a three-page letter of instructions mailed this week to all retail men in the county every detail is covered. The outstanding feature is that the gross margin of \$2.50 per ton on egg, stove, chestnut and pea, as now allowed by the authorities, is not to be disturbed.

While the dealers are not loud in their complaints, yet they feel a great injustice has been done them by the rule that forbids them to charge more than 25c. per ton for carrying coal into cellars. This is particularly unfortunate for the suburban dealers who serve few homes where coal can be unloaded directly from the street into cellars.

For the first time the gross margin of profit on anthracite steam sizes delivered by retailers to steam trade, including buckwheat and smaller sizes, and also bituminous coal, is to be regulated beginning with Apr. 1. On the former it is not to exceed \$1.75 per ton for chute delivery, where the fuel is for power, commercial, hotel or apartment house purposes. On the latter where the uses and method of delivery are the same, \$2 is the limit fixed as the gross profit.

This week the Federal Fuel Administrator for Pennsylvania stated he believes he has succeeded in convincing the operators they must stop mixing relatively low-priced pea coal with high-priced chestnut. This practice was one of the most difficult problems confronting his administration.

The basis of distribution for the coming coal year has now been about worked out by the operating companies. All shipments will be based on deliveries made for the period from Apr. 1, 1916, to Mar. 31, 1917. It is understood that no company will accept any business from buyers who have had no shipments during that period, except for some very good reason, such as slow pay or poor financial condition. While the plan is believed in a general way to be a fair one, there are bound to be many difficulties crop out if it is strictly adhered to.

It seems now that the question of car-load deliveries to private consumers is about to be satisfactorily settled. The fuel committee has let it be known that it is not its intention to interfere with legitimate deliveries of this kind, particularly where the hauling of the coal is done by a regular retail dealer. This applies par-

ticularly to such parties who have been accustomed to buying their coal in this manner for a number of years, or at least prior to April, 1916. It will be necessary to have the approval of the local committees so that the usual check to prevent hoarding may obtain.

There has been some little lull in the very small sizes of steam coal recently. Some of the larger companies have been long on barley and have actually solicited new business. Among the individuals, who are the principal shippers of culm, it is reported that this size is also somewhat dull.

The prices per gross ton f.o.b. cars at mines for line shipment and f.o.b. Port Richmond for tide are as follows:

	Line	Tide		Line	Tide
Broken.....	\$5.90	\$6.05	Buckwheat.....	\$3.15	\$3.75
Egg.....	4.80	6.00	Rice.....	2.65	3.65
Stove.....	5.05	6.35	Boiler.....	2.45	3.55
Nut.....	5.15	6.40	Barley.....	2.15	2.40
Pea.....	3.75	4.65			

Bituminous—With the announcement of the zoning system by the Government the trade anxiously awaits the working out of the plan. While some doubts have been expressed from the very beginning of the plan, it can be taken for granted that the coal men will do the utmost to give it a fair trial.

The railroad traffic conditions while very much improved over the past winter are still far from meeting the demand. It now seems to be almost entirely a problem of motive power, and it is stated that if locomotives could be kept in repair this phase of the problem would soon be eliminated. However, the railroad officials continue to assure shippers that they can note a constant change for the better and it is hoped that they will soon be able to show real results.

BALTIMORE

Easiest market for weeks despite drop in national tonnage report. Jobbing trade busy making new connections. Retailers wait for orders.

Bituminous—While official Washington reported a decidedly decreased mining tonnage for the past week, the supply situation here was the easiest for weeks past. There was no longer evidence of scramble, although the fuel administrator is still directing certain apportionments. The local relief was probably largely due to the fact that the railroads managed to clean up part of the considerable congestion of loaded cars at Brunswick and Cumberland. Because of congestion that continued on some of the northern connections, considerable coal that was billed that way was re-consigned and moved here in order to get the sidings cleaned up. The supplies both at tide and for all rail trading were therefore fairly easy. The jobbing trade is busy adjusting itself to the new conditions to exist after Apr. 1. Many large consumers have already signed up with jobbers to retain the latter as purchasing agents. The public as a whole in fact seems more concerned with establishing some stable supply connection for the coming year than with the method of exact price. There appears to be little complaint on the plan of allowing jobbers the commission for service and credit extension in many cases. The jobbers themselves, while they did not get all they asked through the modification of the original drastic order wiping out jobbing commissions, appear to be well satisfied with developments.

Anthracite—The fuel administrator has not announced his definite plan of action for retailers after Apr. 1, or the schedule of prices. It is generally accepted that the card application system will be put in force for purchasers. A plan to supply but two-thirds of the book orders to any one consumer at the outset of the year seems a strong probability.

Lake Markets

PITTSBURGH

New zoning system studied. Arrangements for Pittsburgh and Connellsville districts quite satisfactory. Prices reaffirmed. Heavy contracting done. Some free coal offered.

Interest in the coal trade this week is centered largely upon the details of the new zoning system, which became available at the beginning of the week. Satisfaction is universally expressed that the Pittsburgh district has been given so much latitude, that indeed it is not confined to one exclusive zone at all, as is the case with the great majority of producing districts.

Such necessary movement of Pittsburgh and Connellsville coal into Ohio as would be interfered with by the zoning system will

be taken care of by the special permits provided. All the normal movements of byproduct coal will be thus covered.

The reaffirmation of former prices as applied to the Pittsburgh district, as announced late last week, seems to have been fully expected by the trade. The basis price of \$2 was reaffirmed and this carries with it the 45c. extra as well as the differentials for slack and screened coal. Thus the only change that will occur Apr. 1 is the slight change in the position of brokers, whereby they must be licensed and will be permitted to make a profit by buying under the set price and selling at any price up to the set price, being permitted also to make brokerage transactions as formerly, with a charge up to 15c. to the consumer. In view of the latest costs reported to Washington the price is a favorable one for the district and leaves no possible ground for complaint on the part of producers with mines that are in the least efficient.

There has been a heavy contracting movement in the past few weeks, for the twelve months beginning Apr. 1, the fact that prices were not fixed for the period not being a drawback, as buyers knew they would have to buy and sellers knew they would have to sell, and there was no fear that prices would be prohibitively high or prohibitively low. The possibility that free coal may at times sell below the set price did not discourage large consumers from making contracts, as it has been a common experience in the past for spot coal to sell below contract prices, the contracts being advantageous to buyers nevertheless on account of the steadier deliveries obtained. There is now a moderate amount of free coal offered in the market, but it is chiefly of relatively low grade. The local fuel administration is just beginning to appoint inspectors to watch coal and indicate any that must be improved or sold at a 50c. discount. The market remains quotable as follows: Slack, \$2.20; mine-run, \$2.45; screened, \$2.70, per net ton at mine. Pittsburgh district, with permission to brokers to charge 15c. extra to buyers when regularly commissioned to make a purchase for them.

BUFFALO

Coal more plentiful. With enough cars the situation would be easy. Jobbers still wondering over their fate. Not much faith in the zoning plan.

Bituminous—The supply is not good, but it is so much better than it was that nobody is complaining now. At the same time all of the former uncertainty remains. The jobbers are making haste to get licenses and they will live up to them if they know what is required. The difficulty now is that so many new orders come out that nobody knows what to do. This has been the case for a long time.

The jobbers are gaining in confidence, though they hardly think that all of them will be needed. All effort is being made to obtain contracts with the mines and quite a good many have been made, though they are not much more than understandings between producer and distributor. Everything has to be made subject to Government regulation. Still it is the idea that a contract of any sort tends to keep the jobber and the operator closer together. It at least appears to be certain that if the operator turns his back on the jobber the consumer will take him up. The complaint is that the arrangement of prices gives all the profits to the operator.

Price quotations are about out of the question, especially since the zoning order has come out, for it is doubtful just what the special coals which may go anywhere, really are. If this section is to be confined regularly to Allegheny Valley coal, there is going to be difficulty, for it is hard to get miners to work the thin veins of that region.

Anthracite—The situation turns on the coming April prices. The supposed decline of 30c. a ton has not yet been confirmed by the companies, so the shipping agents here are not able to make any prices and some of them send the April orders back to the retailers. They do not exactly know what to do. Meanwhile the city supply is good enough to meet all emergencies and the county fuel administration is finding little to do. It is not expected that the supply will run down again this season. At the same time there is clamor for next winter's coal, but that cannot be met now. Canada is uneasy. Shippers are saying that more anthracite was shipped there last season than should have been and advise the buying of bituminous to help out.

DETROIT

Receipts of bituminous coal comfortably offset requirements. Anthracite supply is short. Retailers ask \$3 margin.

Bituminous—There is quite a satisfactory movement of bituminous coal into De-

troit, the amount arriving offsetting in large degree the current requirements of steam and domestic consumers, though the quantity is not so great as that any free coal is to be found on tracks. The larger proportion of the shipments are from West Virginia and Ohio mines and practically no smokeless coal is to be found.

Steam coal users are maintaining a steady demand, which has been somewhat increased in volume by the operation of several large new industrial plants employed in the manufacture of war munitions. Wholesalers and jobbers are advising customers to take advantage of present conditions, wherever possible, by creating reserves. There is reason to believe some effort is being exerted to accomplish this, though in the case of many of the industrial plants the lack of facilities for coal storage in quantities greater than would provide for a few days' needs prevents any important accumulation.

Uncertainty as to what prices will prevail later in the year is serving quite effectively as a handicap on the closing of contracts for future delivery. This is especially true in reference to retail dealers who fear that coal bought at present price might hinder distribution to customers, if competing dealers by delaying their buying should obtain coal cheaper. Meantime the period when lake navigation will reopen is rapidly approaching, and with its arrival there is great probability the shipments by rail will be largely diminished.

Anthracite—Jobbers and retailers are puzzled over the anthracite problem. Receipts are light, so small in fact that retail dealers are in many cases unable to supply customers requiring stove and egg sizes. Efforts to obtain an explanation of this condition at a season of the year when the movement of anthracite might be expected to show good volume have been unsuccessful.

Detroit retailers are protesting against the contention of W. K. Prudden, Michigan fuel administrator, that a margin of \$2 a ton should be adequate on domestic business in the period after Apr. 1. The retailers insist a \$3 margin is necessary to offset increased costs.

COLUMBUS

Steam demand is keeping up well, but there is a slight falling off in domestic orders. Contracting is held up awaiting the revised price list and the completion of the zone plan of distribution.

The continued warm weather has taken the edge off the domestic trade in Ohio and consequently there is a slightly softening tendency shown during the past week. The steam trade continues strong in every particular, and producers as well as distributors believe that the present status of the market is merely a breathing spell before the coming of the lake trade, which is expected to be strenuous. The tone of the market is fairly good and future prospects are considered bright.

Consumers of steam grades have been taking advantage of the slight lull to accumulate some surplus stocks and many have succeeded in laying in quite a surplus. This is especially true of the public utilities corporations, which suffered a great deal last winter. Manufacturing plants of all kinds are now being operated with a full fuel supply. Railroads are also using a large tonnage as the freight movement is as heavy as formerly. Contracting for steam tonnage is being held in abeyance until after Government prices are readjusted.

The domestic trade is rather quiet, which is something new in that branch of the business. Retailers are stocking up to a certain extent, and many householders are laying in their next winter's supply of fuel. Nevertheless there is a slight softening noticeable and this is expected to continue until after the lake season opens. Retail prices are firm at the levels which have prevailed for some time. Pocahontas is in good demand and stocks are extremely scarce. Some West Virginia plants are finding their way into the local market. Anthracite is arriving only in limited quantities.

The production in Ohio fields has been fairly good during the past week. This is especially true of the Hocking Valley and Pomeroy Bend fields. In eastern Ohio there is still a shortage of transportation and the output is restricted to about 65 per cent, a part of which is taken for railroad fuel. Other fields are producing a good tonnage.

The lake trade is expected to open earlier than formerly, judging from reports from the upper lake region. At least producers and jobbers are looking forward to an early opening and preparations have been made to rush a large tonnage to lake ports

as soon as possible. Some fix the date for the opening of navigation at Apr. 15.

Prices of short tons f.o.b. mines are as follows:

	Hocking	Pomeroy	Eastern Ohio
Sized grades.....	\$2.70	\$3.05	\$2.70
Mine-run.....	2.45	2.80	2.45
Screenings.....	2.20	2.45	2.20

CINCINNATI

Heavy demand from all departments of the trade, for summer delivery and for immediate use, continues. Freight congestion is hampering business, although the car supply is better.

With the complete realization which exists among coal consumers, large and small, of the necessity for getting an adequate supply of fuel in storage during the spring and summer months, the demand for coal is continuing at a figure never before known this early in the season, and bids fair to increase, rather than diminish, as the spring advances. It is also true that the current season of consumption for heating purposes is not yet over, as a period of warm weather has been succeeded in this section by colder weather, necessitating further consumption of coal by domestic consumers, which has furnished additional stimulus to the demand in the retail market. The restrictions imposed upon purchases by domestic consumers have also served as a warning that it will not be possible to obtain coal at any time and in any quantities desired; while industrial consumers, on the other hand, have fresh in mind the conditions which existed during the past winter, from which many are only now recovering. The serious congestion of freight at all terminals, including Cincinnati, and on the tracks of all of the railroads, is interfering badly with the movement of coal, and gives every indication of hampering the movement of fuel during the summer months to an extent which will prevent a normal movement. This is a factor which the trade is fully aware of, and is one which cannot, apparently, be disposed of.

LOUISVILLE

Short car supply is handicapping operations in both eastern and western Kentucky fields, increasing difficulty of operators in holding labor. Domestic and steam demand both good, with dealers anxiously awaiting summer prices.

The coal mine operators of the city and state are sitting still, and waiting with much interest such a time as the Government decides to fix summer coal prices. Many dealers believe that prices will be fixed at the mine about Apr. 1, but actions of state fuel administrators in calling on the public to lay in their coal supplies now make it appear as though there will be no price-fixing done this year. Eastern Kentucky operators feel confident that mine quotations will be readjusted and are not anxious to book much additional business until the question of prices is settled. In the eastern Kentucky field the general situation is about the same, the supply of coal cars continuing short, with labor scarce and hard to find.

In western Kentucky the car supply has been uncertain. The Louisville & Nashville has been supplying about 40 per cent. of coal car requirements, while the Illinois Central has been in worse shape, some mines not having a car on Illinois Central sidings for four days at a time. Under such conditions it has been hard to hold labor. However, there is a good demand for western Kentucky steam coal, with manufacturers endeavoring to buy nut and screenings, and domestic demand picking up somewhat due to many consumers endeavoring to place orders early. Yard stocks are picking up somewhat, and retailers are endeavoring to lay up stocks before booking any orders that are not for immediate consumption.

BIRMINGHAM

Current consumption causes a steady movement of steam coal, but booking of business for extended deliveries of both steam and domestic grades awaits new Federal schedules and regulations. Production improves little, as miners decline to work full time.

The heavy requirements for steam coal prevents any interruption in the demand and movement of this grade, but operators and consumers are holding off from the placing of orders for any large tonnages for delivery over an extended period until Government prices and regulations are announced. Domestic inquiry is light, dealers expecting some price concessions by Apr. 1,

and the demand from consumers can be met early from present stocks.

Coal brokers view the new regulations philosophically and announce that they will be strictly observed when received. The opinion is expressed that legitimate business will hardly be impaired under existing conditions in the coal industry, the broker merely having to look to the buyer for his commission instead of the operator, the compensation allowed him being the same that is now being received.

Complaint is general that coal production is being curtailed seriously by the continued indifference of the miners to observe full-time schedules. The high rate of compensation mine workers are now receiving is principally accountable for these conditions.

Coke

CONNELLSVILLE

Movement improving slowly. Trouble on the Pennsylvania main line. Occasional foundry coke offerings. Screenings from old dumps offered.

The coke movement continues to improve at times and rarely loses any of the ground gained. In the first two months of the year there was no week in which shipments amounted to as much as 300,000 tons, but each of the first two weeks in March showed about 335,000 tons, and last week's shipments are estimated at 350,000 tons or more, while this week may show a slight further increase. Car supplies on the Monongahela R.R. were 60 per cent Monday of this week and 30 per cent Tuesday, with expectations of better supplies later. One difficulty of late has been that a number of the cars furnished have been gondolas, some capable of carrying only 20 or 25 tons of coke.

Offerings of foundry coke in the open market are somewhat less infrequent than formerly, but there is still a great shortage and buyers usually have to show necessity before they can make purchases. Sometimes this can be done between buyer and operator, but frequently the good offices of the fuel administration are invoked. There is little spot furnace coke offered. As operations are irregular an operator with a surplus usually has some that has been in the oven 72 hours, and that is classifiable as foundry coke if sold to a foundry, hence it is offered in that form.

The "Courier" reports production in the Conneltsville and lower Conneltsville region in the week ended Mar. 16 at 335,122 tons, an increase of 20,713 tons, and shipments at 334,584 tons, a decrease of 631 tons. Rail shipments, however, increased a shade, as river shipments were only 4000 tons, against 9200 tons the preceding week.

The market remains quotable at the set prices: Furnace, \$6; foundry, 72-hour selected, \$7; crushed, over 1 in., \$7.30 per net ton at ovens. Considerable business is now being done in screenings obtained from old dumps. A favorite method is for a contractor to buy a pile outright and get what he can. Some of this, fairly clean but with occasional lumps of "ash" and raw coal, has been sold at \$5.50; but the brokers handling the business expect to get better prices as consumers become familiar with the quality of this material as salamander fuel and similar functions.

Birmingham—Movement of coke out of the district to which track equipment is restricted is being much hampered by inability to secure the necessary box-car equipment, and producers are getting behind with foreign deliveries. The demand continues good, and inquiries for foundry coke come from many distant points—Saginaw, Mich., for instance. Mexican interests have been negotiating for a large tonnage, but so far have been unable to place it.

Middle Western

GENERAL REVIEW

Market extremely quiet. Few storage orders of any consequence have been placed.

Market conditions the past week have been dull. The trade has been in a stage of expectancy, awaiting the announcement of the definite program to be outlined by the Federal Fuel Administration. The matter of zoning held up the placing of orders, and also to some extent the hopes of the buyer that Illinois and Indiana coal would be reduced in price.

The announcement of both a definite zone plan and the new prices for Illinois and Indiana has had the effect of putting the producer's mind at rest as to what he will be able to get for coal, as well as to the place he may ship the coming year. The trade is therefore planning to get down to business at an early date.

One of the shocks of the week is the announcement that there will be no smokeless Eastern coal allowed to move into this section. This does not include hard coal, which will be undisturbed other than what is naturally to be expected by reason of limited car supply and embargoes. Those who have used Eastern bituminous coal in former years are rearranging their boiler walls so as to get the highest possible efficiency from Western coal.

Car supply has shown some improvement over the preceding week. Particularly is this true on the Burlington and Missouri Pacific. The Illinois Central and Chicago & Eastern Illinois lines have not made so good a showing as the two former named. As a whole Williamson, Franklin and Saline Counties have had a 75 per cent. car supply. At no time so far has there been plenty of orders to take care of all the coal produced in any of the three foregoing counties. However, reports indicate that some of the mines in the Springfield and fifth and ninth districts are having some difficulty in moving promptly their outputs.

The new prices affect but two groups in Illinois, with the exception of mine-run, which will be 5c. per ton higher beginning Mar. 23.

CHICAGO

Market quiet on domestic, but steam users are absorbing all the better grades offered.

The announcement during the week that no Eastern bituminous coal would be allowed to come west has had a marked effect on the dealers. The policy in the past was to get as much Eastern coal as possible as soon as the winter demands were out of the way. It was expected that this course would also be followed this season, but since reliance will now have to be placed solely on Illinois and Indiana coals, dealers in most instances have made no plans to obtain a supply. Now that zone and price questions are settled, dealers expect to arrange their next year's connection at once and start the filling of customers' orders as rapidly as possible.

Quotations in the Chicago market are as follows, per net ton f.o.b. cars at mines:

	Williamson and Franklin County	Saline and Harrisburg	Fulton and Peoria	Springfield	Cartersville	Grundy, La Salle, Bureau and Will
Steam lump.....	\$2.65@2.80	\$2.65@2.80	\$3.05@3.20	\$2.65@2.80	\$2.65@2.80	\$3.35@3.50
Domestic lump.....	2.65@2.80	2.65@2.80	3.05@3.20	2.65@2.80	2.65@2.80	3.35@3.50
Egg or furnace.....	2.65@2.80	2.65@2.80	3.05@3.20	2.65@2.80	2.65@2.80	3.35@3.50
Small egg or nut.....	2.65@2.80	2.65@2.80	3.05@3.20	2.65@2.80	2.65@2.80	3.35@3.50
Stove.....	2.65@2.80	2.65@2.80	3.05@3.20	2.65@2.80	2.65@2.80	3.35@3.50
Chestnut.....	2.65@2.80	2.65@2.80	3.05@3.20	2.65@2.80	2.65@2.80	3.35@3.50
Pea.....	2.65@2.80	2.65@2.80	3.05@3.20	2.65@2.80	2.65@2.80	3.35@3.50
Washed egg.....	2.65@2.80	2.65@2.80	3.05@3.20	2.65@2.80	2.65@2.80	3.35@3.50
Washed stove.....	2.65@2.80	2.65@2.80	3.05@3.20	2.65@2.80	2.65@2.80	3.35@3.50
Washed nut.....	2.65@2.80	2.65@2.80	3.05@3.20	2.65@2.80	2.65@2.80	3.35@3.50
Mine-run.....	2.45@2.60	2.45@2.60	2.85@3.00	2.45@2.60	2.45@2.60	3.10@3.25
Screenings.....	2.15@2.30	2.15@2.30	2.45@2.60	2.15@2.30	2.15@2.30	2.85@3.00
Washed slack.....	2.15@2.30	2.15@2.30	2.50@2.65	2.15@2.30	2.15@2.30	2.85@3.00

	Clinton and Sullivan	Knox and Greene	Eastern Kentucky	Smokeless Pocah. and W. Va.	Penna.	Hocking	West Va. Splint
Dom. lump.....	\$2.65@2.80	\$2.65@2.80	\$3.10@3.25	\$2.60@2.75	\$2.70@2.85	\$3.05@3.20	\$2.85@3.00
Steam lump.....	2.65@2.80	2.65@2.80	3.10@3.25	2.60@2.75	2.70@2.85	3.05@3.20	2.85@3.00
Egg.....	2.65@2.80	2.65@2.80	3.10@3.25	2.60@2.75	2.70@2.85	3.05@3.20	2.85@3.00
Small egg or nut.....	2.65@2.80	2.65@2.80	3.10@3.25	2.60@2.75	2.70@2.85	3.05@3.20	2.85@3.00
Mine-run.....	2.40@2.55	2.40@2.55	2.85@3.00	2.45@2.60	2.45@2.60	2.70@2.85	2.60@2.75
Screenings.....	2.15@2.30	2.15@2.30	2.60@2.75	2.10@2.25	2.10@2.25	2.55@2.70	2.35@2.50

MILWAUKEE

Warm weather brings tranquillity to the fuel market. Coal and coke easily obtainable. Shutting down of malt houses releases anthracite buckwheat stocks.

Genuine spring weather has retired the subject of coal for the time being, but consumers are ready for a drive upon the coal piles as soon as April arrives and the Federal Fuel Administrator makes public his edict as to prices and limitation of supplies.

All kinds of coal and coke, except chestnut anthracite, seem to be easily obtainable in moderate quantities. The shutting down of malt houses released considerable buckwheat anthracite which had been held in reserve for that industry.

State Fuel Administrator W. N. Fitzgerald, upon his return from Washington, whither he went to consult the Federal fuel authorities, made a statement that in his opinion the supply of hard coal for

Wisconsin the coming winter would be as great as, if not greater than, that of last year. A report from the East that many western states would receive nothing but soft coal caused much uneasiness among consumers whose furnaces or heaters will not consume bituminous coal.

ST. LOUIS

Extremely quiet situation with an abundance of coal from all fields and no absorbing market. Car supply still short on some roads. Steam demand quiet. Anthracite shipments good.

The market has been an extremely quiet one with plenty of coal under demurrage at East St. Louis from all fields. There has been a holding up of business by the buyers generally, anticipating new prices.

The prices announced under date of the 23d, showing an increase of 5c. a ton at the mine for Illinois mine-run and other prices, same as heretofore, should open up an extremely good business from now on.

The arrangement whereby western Missouri is not to get any Illinois coal is going to work an extreme hardship on a certain section of the state that has to a large extent depended upon Illinois for its principal fuel. Especially is this so when it comes to storage coal for the spring and summer months, inasmuch as Missouri coal will not store at all and Kansas coal is an extremely poor stocker.

Locally, the situation is quiet. There has been no domestic business, and the steam trade has been overloaded. From the Cartersville field there has been an abundance of coal. The Wabash and Chicago & Alton embargoes against Chicago still hold, and this has caused an unusual supply of coal to be thrown in here.

Working time in the Cartersville field is better than it has been for some time past. The car supply on the Illinois Central and Iron Mountain, however, is not good and motive power on both these lines is extremely poor. In the Duquoin the same condition practically exists.

The Mt. Olive field seems to be working better than the others and is finding a ready market for practically all of its tonnage. The car supply here is good, and there has been an abundance of this coal for the local market, as well as outside.

In the Standard field the same complicated conditions prevail. The Missouri & Ohio and the Illinois Central have been re-

	Williamson and Franklin County	Mt. Olive and Staunton	Standard
6-in. lump.....	\$2.65@2.80	\$2.65@2.80	\$2.65@2.80
3x6-in. egg.....	2.65@2.80	2.65@2.80	2.65@2.80
2x3-in. nut.....	2.65@2.80	2.65@2.80	2.65@2.80
No. 2 nut.....	2.65@2.80	2.65@2.80	2.65@2.80
No. 3 nut.....	2.65@2.80	2.65@2.80	2.65@2.80
No. 4 nut.....	2.65@2.80	2.65@2.80	2.65@2.80
No. 5 nut.....	2.15@2.30	2.15@2.30	2.15@2.30
2-in. sergs.....	2.15@2.30	2.15@2.30	2.15@2.30
2-in. lump.....	2.65@2.80	2.65@2.80	2.65@2.80
3-in. lump.....	2.65@2.80	2.65@2.80	2.65@2.80
Steam egg.....	2.40@2.55	2.40@2.55	2.40@2.55
Mine-run.....	2.40@2.55	2.40@2.55	2.40@2.55
Washed:			
No. 1.....	\$2.65@2.80	\$2.65@2.80	
No. 2.....	2.65@2.80	2.65@2.80	
No. 3.....	2.65@2.80	2.65@2.80	
No. 4.....	2.65@2.80	2.65@2.80	
No. 5.....	2.15@2.30	2.15@2.30	

I. C. C. Decisions

No. 8298—P. Dougherty Co. vs. Baltimore & Ohio Railroad Co. et al. Submitted Sept. 27, 1916. Decided Feb. 6, 1917.

Charges at Baltimore, Md., for trimming bituminous coal in single-deck vessels, with hatch openings of certain sizes, not found to have been or to be unreasonable or unduly prejudicial. Complaint dismissed.

No. 9558—West Virginia Rail Co. vs. Chesapeake & Ohio Railway Co. et al. Submitted Nov. 5, 1917. Decided Feb. 9, 1918.

Rates for the interstate transportation of light section steel rails in carloads from Huntington, in the state of West Virginia, to points on the line of the Norfolk & Western Ry. in West Virginia and Virginia, certain of which were prescribed by the Commission in West Virginia Rail Co. vs. Baltimore & Ohio Railroad Co., 26 I. C. C. 622, not shown to have been or to be unreasonable, unjustly discriminatory, or unduly prejudicial. Complaint dismissed.

No. 9354—Lincoln Commercial Club vs. Colorado & Southern Railway Co. et al. Submitted May 14, 1917. Decided Dec. 15, 1917.

Upon complaint that rates on bituminous coal, nut, pea and slack, in carloads, to stations on the Chicago, Burlington & Quincy R.R. in the state of Nebraska—Sweetwater to Angola, both inclusive—from mines in the State of Colorado are unreasonable; and that the failure of defendants to publish and maintain lower rates on nut, pea and slack coal to the same stations subjects complainants' members to undue and unreasonable prejudice and disadvantage and gives to other coal dealers located at other stations in the same general territory undue and unreasonable preference and advantage; Held, that the evidence shows the adjustment of rates complained of is, as regards nut coal, unduly prejudicial within the meaning of the act.

General Statistics

SOUTHWESTERN INTERSTATE COAL OPERATORS ASSOCIATION

The following table, which gives a comparative statement of tonnage for the years 1916 and 1917, covers only tonnage of Association members estimated as approximately 95 per cent. of production in Missouri, Kansas and Arkansas and 20 per cent. in Oklahoma since September, 1916.

State	1916	1917	Increase	Decrease
Missouri.....	3,088,734	3,627,418	538,684	
Kansas.....	6,116,351	6,511,860	395,509	
Arkansas.....	1,364,274	1,487,774	123,500	
Oklahoma.....	1,851,207	651,816		1,199,391

12,420,566 12,278,868 1,057,693 1,199,391

NORFOLK & WESTERN

Below is a statement of the coal tonnage from mines on the Norfolk & Western Ry. and from other railroads, for the month of February, 1918:

From:	Net Tons
Pocahontas field.....	1,309,126
Tug River field.....	272,704
Thacker field.....	234,624
Kenova field.....	77,658
Clinch Valley field.....	121,156
Other Northern and Western fields.....	16,532

Total Northern and Western fields.....	2,031,800
Williamson & Pond Creek R.R.....	151,588
Tug River & Kentucky R.R.....	49,623
All other railroads.....	71,070

Total..... 2,304,081

duced to as low as one to two days a week car supply. The Illinois Southern Ry. transfer at St. Genevieve being out of order has thrown a great deal of Missouri & Ohio coal into the St. Louis market.

Practically all the roads at East St. Louis have unbilled coal. Working conditions in the Standard field have improved considerably. There is no dissension among the workers and conditions in a general way are very satisfactory.

There has been a considerable tonnage of anthracite coming in. The past week has probably seen 1500 to 2000 tons. A few cars of West Virginia smokeless has gone through and considerable Arkansas has been booked but not moving as yet.

Coke for domestic purposes is more plentiful than at any time since last summer.

There will be no change in the retail price of coal until some time in the early part of April, and the prevailing market here is per net ton f.o.b. mine: